96-166

MUNICIPAL WASTE-TO-ENERGY ACT OF 1980

HEARING

BEFORE THE

SUBCOMMITTEE ON TRANSPORTATION AND COMMERCE

OF THE

COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE HOUSE OF REPRESENTATIVES

NINETY-SIXTH CONGRESS

SECOND SESSION

ON

H.R. 6638

A BILL TO PROVIDE FOR AN ACCELERATED PROGRAM FOR THE RECOVERY OF ENERGY FROM MUNICIPAL WASTES, AND FOR OTHER PURPOSES

APRIL 22, 1980

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MUNICIPAL WASTE-TO-ENERGY ACT OF 1980

TUESDAY, APRIL 22, 1980

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON TRANSPORTATION AND COMMERCE,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met, pursuant to notice at 9:30 a.m., in room B-318, Rayburn House Office Building, Hon. James J. Florio, chairman, presiding.

Mr. FLORIO. The subcommittee will come to order.

I would like to begin by welcoming all in attendance here today on the bill, H.R. 6638. This proposal is based on an objective shared by most of us, the need to recover energy and materials from solid waste. The bill before us sets out a framework for achieving this laudable goal.

The purpose of today's hearing is to evaluate this framework, with an emphasis on the financial incentives provided in the bill. This committee is particularly concerned with the impact of these incentives on the existing waste-to-energy industry capability. It is this committee's understanding that there is a viable resource recovery industry now in existence.

This committee is in support, and the record will bear it out, of any type of initiative to enhance the development of this industry. However, it is our concern that the constant promise of Federal assistance to the private sector has done more to inhibit, rather than enhance, the development of resource recovery, may in fact be counterproductive and may be inhibiting the industry to develop on its own.

We are also aware of the fact there are a substantial number of programs in existence and we want to evaluate how all these programs are working particularly in conjunction with this particular proposal.

The bill, H.R. 6638, contains most of the Federal financial incentives that are in our power to provide. The issue before us is whether are not it is appropriate to launch a major financial commitment in this area. We have support, in taking this bill up today, of the sponsors of the proposal and they will be monitoring the results of our testimony today very closely.

Without objection, the text of H.R. 6638 will be printed at this point in the record.

[Testimony resumes on p. 30.]

[The text of H.R. 6638 follows:]

[H.R. 6638, introduced by Mr. Fish (for himself, Mr. Ottinger, Mr. Dingell, Mr. Brown of Ohio, Mr. Roe, Mr. Glickman, Mr. Heftel, Mr. Markey, Mr. Goldwater, Mr. Gore, Mr. Davis of Michigan, Mr. Swift, Ms. Holtzman, Mr. Hollenbeck, Mr. Royer, Mr. Moffett, Mr. Wirth, Mr. Maguire, Mr. Gramm, and Mr. Conte) on February 27, 1980,

Cosponsored on March 25, 1980, by:
Mr. Ritter.]

A BILL

To provide for an accelerated program for the recovery of energy from municipal wastes, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Municipal Waste-to-Energy Act of 1980".

FINDINGS AND PURPOSE

SEC. 2. (a) The Congress hereby finds that—

(1) the United States is faced with a finite and diminishing resource base of native fossil fuels and, as a consequence, must develop as quickly as possible a diversified national energy capability;

(2) the current imbalance between supply and demand for energy in the United States is likely to grow for many years;

(3) municipal waste provides a valuable store of energy and energy intensive materials which can be recovered and used to reduce our Nation's dependence on imported oil supplies and the unfavorable impact of oil imports on interstate and foreign commerce, including the Nation's balance of payments;

(4) the volume of municipal waste is increasing and the agencies of State and local governments with municipal waste management responsibilities are confronting growing problems in disposing of this waste in environmentally sound and economically acceptable ways;

(5) discarding millions of tons of recoverable materials which could be separated from municipal wastes results in needless depletion of our national energy resources;

(6) a commitment to recover energy from municipal wastes on a priority basis can potentially produce

the equivalent of one hundred and forty-nine million barrels of oil annually by 1990 and an additional one quad of energy in recovered materials;

(7) the recovery of energy and usable materials from municipal wastes would substantially reduce the volume and quantity of such wastes which are buried in the land and the amount of land required for disposal of such wastes;

(8) further improvements in the development of economical, commercially demonstrated technology for the recovery of energy from municipal wastes will present the opportunity to develop export markets for this technology;

(9) the implementation of projects to recover energy from municipal wastes is a demanding, time consuming, and costly process, imposing significant burdens on project sponsors and participants that often frustrate or delay the successful outcome of such projects;

(10) the technology for recovering energy from municipal wastes is evolving and the investment in research, development, demonstration, and commercialization will yield improvements in the economy, efficiency, reliability, safety, and environmental impacts of energy resource recovery technology;

(11) an aggressive research, development, demonstration, and commercialization program should maximize the future contribution of energy from municipal wastes;

(12) the realization of the full potential of energy from municipal wastes will require coordination and cooperation among all levels of government, creative approaches to facilitating the institutional, legal, and financial arrangements that are necessary to support a project, substantial investment of private capital, and a significant increase in the manpower and technical capabilities needed to support development of the field; and

(13) it is the proper and appropriate role of the Federal Government to support research, development, demonstration, and commercialization efforts to convert municipal wastes into energy and to assist private industry, other entities, and the general public in hastening the development of this resource.

(b) It is declared to be the policy of the United States and the purpose of this Act to establish an aggressive research, development, demonstration, and commercialization program for converting municipal wastes into energy. It is further declared that the objectives of such program are—

(1) to accelerate the utilization of municipal wastes as a source of energy and energy intensive materials;

(2) to conserve energy through the research, development, demonstration, and commercialization of improved processing technologies that will permit the economical recovery of energy from municipal wastes in an environmentally acceptable manner;

(3) to conserve and produce approximately one quadrillion British thermal units of energy per year by the year 1990 from the processing of municipal wastes;

(4) to coordinate the research, development, demonstration, and commercialization activities in the Department of Energy for the purpose of improving the efficiency, reliability, safety, and environmental benefits of municipal waste-to-energy recovery operations;

(5) to provide for financial assistance to encourage the development of municipal waste-to-energy facilities and increased commercialization of technologies for such facilities;

(6) to encourage private capital investment and activities in the development of facilities to convert municipal wastes into energy and to recover materials which by their use will conserve significant quantities of energy; and

(7) to establish and implement a coordinated, comprehensive energy strategy in the Department of Energy specifically directed toward encouraging and assisting public and private efforts in the application of methods, technologies, and processes to recover energy from municipal wastes.

DEFINITIONS

SEC. 3. For the purposes of this Act—

(1)(A) the term "municipal wastes" means solid waste, sewage, and other refuse (including mixtures of organic and nonorganic refuse) produced—

(i) from waste collection or disposal systems owned or operated by municipalities; or

(ii) from other waste collection or disposal systems or waste flows which, under regulations prescribed by the Secretary, are considered to be comparable to the systems described in subparagraph (A) and the inclusion of which under such term is not inconsistent with the purposes of this Act and is not likely to create a substantial commercial benefit to any private person; and

(B) such term does not include any radioactive materials;

(2) the term "facility" means any building, facility, or other structure predominantly used for convert-

ing municipal wastes into energy, and it includes the real property and equipment associated with such structure;

(3) the term "municipality" includes any city, town, borough, county, parish, district, or other public body created by or pursuant to State law;

(4) the term "public or private entity" includes any individual, corporation, partnership, firm, association, agricultural cooperative, public- or investor-owned utility, public or private institution or group, municipality, State agency, or other entity; and

(5) the term "Director" means the Director of the Office of Urban Waste Energy Management (established in the Department of Energy under section 301 of this Act).

TITLE I—RESEARCH, DEVELOPMENT, AND DEMONSTRATION

ESTABLISHMENT OF PROGRAM

SEC. 101. (a) The Director shall establish, conduct, and promote an accelerated research, development, and demonstration program for the optimal recovery of energy from municipal wastes. As part of such program, the Director, after consulting with the Administrator of the Environmental Protection Agency and the Secretary of Commerce, shall undertake—

(1) the research, development, and demonstration of methods to recover energy from municipal wastes, including the marketing of recovered materials;

(2) the development and application of new municipal waste-to-energy recovery technologies;

(3) the assessment, evaluation, demonstration, and improvement of the performance of existing energy recovery technologies with respect to capital costs, operating and maintenance costs, total project financing, recovery efficiency, and the quality of recovered energy and energy intensive materials;

(4) the evaluation of energy resource recovery projects for the purpose of developing a base of engineering data that can be used in the design of future resource recovery projects to recover energy from municipal wastes; and

(5) research studies on the size and other significant characteristics of potential markets for energy resource recovery technologies and recovered energy and energy intensive material products.

(b)(1) The Director shall, to the extent provided in authorization and appropriation Acts, provide, pursuant to this Act, financial assistance by making grants, contracts, price supports, purchase guarantees, loan guarantees, and cooperative agreements, or any combination thereof, to public or pri-

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vate entities to support the cost of planning, designing, constructing, operating, and maintaining pilot, experimental, proof of concept, and demonstration facilities, and modifications of existing facilities solely for demonstration purposes, for the conversion of municipal wastes into energy or the recovery of materials.

(2) In carrying out his duties under this subsection, the Director shall act in accordance with the provisions of sections 19 and 20 of the Federal Nonnuclear Energy Research and Development Act of 1974.

(c) Within six months after the date of the enactment of this Act, the Director shall prescribe such regulations as may be necessary or appropriate to carry out the provisions of this section.

(d) The program established under this section shall be designed to achieve its goals as soon as practicable, but in no event later than ten years after the date of the enactment of this Act.

AMENDMENTS TO FEDERAL NONNUCLEAR ENERGY RESEARCH AND DEVELOPMENT ACT

SEC. 102. (a) Section 20 of the Federal Nonnuclear Energy Research and Development Act of 1974 is amended by striking out "municipal waste" in subsections (b)(1) (first sentence) and (b)(2) and inserting in lieu thereof "public or private entity municipal waste".

(b) Section 20(b)(3) of such Act is amended—

(1) by striking out "municipal" and inserting in lieu thereof "public or private entity"; and

(2) by inserting before the period at the end thereof the following: ", or any entity described in section 3(4) of the Municipal Waste-to-Energy Act of 1980".

(c) Section 20(b)(4) of such Act is amended—

(1) by striking out "by the municipality" and inserting in lieu thereof "by a public or private entity"; and

(2) by striking out the second sentence.

(d) Section 20(d)(1) of such Act is amended by striking out "municipalities" and inserting in lieu thereof "public or private entities".

(e) Section 20(f) of such Act is amended by striking out "municipality" and inserting in lieu thereof "public or private entity".

(f) The heading of section 20 of such Act is amended by striking out "MUNICIPAL" and inserting in lieu thereof "PUBLIC AND PRIVATE ENTITY".

AUTHORIZATION OF APPROPRIATIONS

SEC. 103. There is hereby authorized to be appropriated to the Director to carry out the provisions of this title the sum of $50,000,000 for the fiscal year ending September 30, 1982.

TITLE II—COMMERCIALIZATION

DEFINITIONS

SEC. 201. For the purposes of this title—

(1) the term "person" means any individual, company, cooperative, partnership, corporation, association, consortium, unincorporated organization, trust estate, or any entity organized for a common business purpose or State or any political subdivision or governmental entity thereof;

(2) the term "financial assistance" means any of the following forms of financial assistance—

(A) loans;

(B) grants;

(C) guarantees of, or commitments to guarantee, funded indebtedness (other than interest) (hereinafter referred to as "loan guarantees");

(D) guarantees of, or commitments to guarantee, the price received or to be received by a person from the sale of energy products (hereinafter referred to as "price guarantees"); and

(3) the term "energy products" means energy recovered from the processing of municipal wastes or any recovered materials from such processing activities.

FINANCIAL ASSISTANCE

SEC. 202. (a) The Director shall establish a program under which financial assistance may be provided for commercial-scale projects to convert municipal wastes into energy or conservation of energy through recovery of materials. Criteria for providing financial assistance shall be promulgated by regulations under this section and shall include as considerations—

(1) the amount of Federal financial commitment involved;

(2) the unit production cost within a given technological process, taking into account the amount and value of the anticipated energy products; and

(3) in determining relative Federal commitment, in decreasing order of priority, preference shall be given to—

(A) price guarantees,

(B) loan guarantees,

(C) loans, and

(D) grants.

(b)(1) The Director shall make awards of loan guarantee assistance pursuant to section 204 only upon a determination that price guarantees will not adequately support the construction and operation of the municipal waste processing

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project or will unduly restrict the available participants for that project.

(2) The Director shall not award financial assistance in the form of loans pursuant to section 203 unless he determines that price guarantees and loan guarantees will not adequately support such construction and operation or will unduly restrict the available participants for that project.

(3) Grants may be made by the Director under section 207 only upon a determination that loans, price guarantees and loan guarantees will not adequately support such construction and operation or will unduly restrict the available participants in the project.

(c) Financial assistance under this title shall be made so as to encourage and supplement, but not to compete with nor supplant any private capital or investment under authority of any other Federal law which otherwise would be available at a viable cost for a proposed specific municipal waste processing project. To that end, the Director shall establish internal procedures, standards, and criteria for the timely review for compliance with such requirement of each new award of financial assistance for a specific proposed municipal waste processing project, and further the Director shall make a determination for each award of financial assistance under this title that such requirement has been met.

(d) Any price guarantee pursuant to section 205 shall include an express provision to the effect that the price may be the subject of review and possible renegotiation in not less than three years from the date of initial production by the project, at which point the Director shall specifically determine the need for continued financial assistance pursuant to such agreement.

(e) Any financial assistance under this section shall be made on only an express condition that the amount of the financial assistance under this title, together with the value of any loan, loan guarantee, price guarantee, or grant under any other Federal law for the project involved, does not exceed 75 per centum of the total capital costs of that project, as estimated by the Director. The Director shall, by regulation, prescribe the method by which the value of loan guarantees, price guarantees, and purchase agreements shall be valued.

(f) No project receiving financial assistance under section 203, 204, 205, or 206 may thereafter be eligible to receive financial assistance under any such section.

(g) Any specific tax credit directly associated with a municipal waste processing project shall be taken into consideration in determining the need for financial assistance awarded pursuant to this title.

LOANS

SEC. 203. (a) The Director may, on such terms and conditions as he deems appropriate, commit to, or enter into loans to any person for a municipal waste processing project, except that a loan under this section shall not exceed 49 per centum of the total capital costs of the project, unless he determines that the borrower has satisfactorily demonstrated that such limit would prevent the financial viability of the proposed project and therefore additional loan assistance is necessary.

(b) Each loan made under this title shall bear interest at such rate as the Director may determine, giving consideration to the needs and capacities of the recipient and the prevailing rates of interest (public and private), except that such rate shall not be less than a rate determined by the Secretary of the Treasury, taking into consideration the current average yield on outstanding marketable obligations of the United States with remaining periods of maturity comparable to the average maturities of such loans. No loan shall be made unless the Director shall have determined that there is a reasonable prospect of repayment or that such municipal waste processing project will have a substantial demonstration value.

(c) Loans may be made either directly or in cooperation or participation with banks or other lending institutions.

Loans may be made directly upon promissory notes or other evidence of indebtedness or by way of discount or rediscount of obligations tendered for the purpose.

(d) The terms and conditions of loans shall provide that, in the event of default by a borrower, the Director shall be entitled to operate and manage the project involved, in addition to such other administrative and judicial remedies as may be available to the Director with respect to that default (and such right shall be expressly set forth in the loan or related agreement).

LOAN GUARANTEES

SEC. 204. (a)(1) The Director may, on such terms and conditions as he deems appropriate, commit to, or enter into loan guarantees against loss of principal (but not interest) on bonds, notes, or other obligations (including refinancing thereof) issued solely to provide funds to any person for a municipal waste processing project, except that such guarantee shall not at any time exceed—

(A) 80 per centum of the total indebtedness for the municipal waste processing project, as determined by the Director; or

(B) 60 per centum of the total capital costs of such project, as determined by the Director.

(2) Any guarantee made by the Director under this section shall not be terminated, canceled, or otherwise revoked,

except in accordance with the terms thereof, and shall be conclusive evidence that such guarantee complies fully with the provisions of this title and of the approval and legality of the principal amount, interest rate, and all other terms of the securities, obligations, or loans and of the guarantee.

(b) The Director may not exercise the authority granted by this section to guarantee any loan issued in whole or in part by the Federal Government, any State or local political subdivision, or any agency or instrumentality thereof.

(c) The terms and conditions of loans shall provide that, in the event of default by a borrower, the Director shall be entitled to operate and manage the project involved, in addition to such other administrative and judicial remedies as may be available to the Director with respect to that default (and such right shall be expressly set forth in the loan or related agreement).

(d) The Director may not guarantee any loan acquired by the Federal Financing Bank.

PRICE GUARANTEES

SEC. 205. (a) The Director may, on such terms and conditions as he deems appropriate, commit to, or enter into price guarantees providing that the price that a person will receive for all or part of the production from a municipal waste processing project which is beneficially utilized for production or conservation of energy shall not be less than a

specified sales price determined as of the date of execution of the commitment or the price guarantee, except that—

(1) no such price guarantee may cover any production which occurs after the five-year period beginning on the date the Director determines initial production commences;

(2) no such price guarantee may be based upon a cost plus arrangement or variant thereof which guarantees a profit to the person, except that the use of a cost of service pricing mechanism by a person pursuant to law, or by a regulatory body establishing rates for a regulated person, shall not be deemed to be a cost plus arrangement or variant thereof; and

(3) if the Director determines that such project would not otherwise be satisfactorily completed or continued and that completion or continuation of such project is consistent with the purposes of this Act, the sales price set forth in the price guarantee may be renegotiated.

In awarding financial assistance under this section, the Director shall establish such specified sales price at the level which will provide the minimum subsidy determined by the Director to be necessary to provide an adequate incentive, in light of projected prices of competing fuels and the require-

ments for economic and financial viability of the municipal waste processing project.

(b) Any price guarantee agreement under this section may provide that amounts expended by the Director under that agreement be recovered from proceeds from production of the facility occurring after the period for which prices are guaranteed. Any such recovery shall be at such rates and under such conditions as the Director shall prescribe.

GRANTS

SEC. 206. (a) The Director may, on such terms and conditions as he deems appropriate, commit to, or make grants to, any person for a municipal waste processing project; except that no such grant shall exceed 30 per centum of the total capital costs of the municipal waste processing project, as determined by the Director.

(b) Any grant agreement under subsection (a) may provide that amounts expended by the Director under such agreement be recovered from proceeds from the production of the facility occurring after the date that the Director determines initial production commences. Any such recovery shall be at such rates and under such conditions as the Director shall prescribe.

PUBLIC ACCEPTANCE AND UTILIZATION

SEC. 207. In order to accelerate the public acceptance and utilization of technologies for converting municipal waste into energy—

(1) the Director shall conduct economic analyses (including identification of potential markets and market forecasts) for the municipal waste-to-energy conversion technologies which are available for commercialization, and, not later than October 1, 1981, and annually thereafter, shall publish and disseminate reports on such analyses; and

(2) the Director shall review such technologies which are in commercial use in other countries and shall publish and disseminate reports on any such technologies which could be put into commercial use within the United States.

AUTHORIZATION OF APPROPRIATIONS

SEC. 208. There is hereby authorized to be appropriated to the Director to carry out the provisions of this title the sum of $100,000,000 for the fiscal year ending September 30, 1982.

TITLE III—GENERAL PROVISIONS

OFFICE OF URBAN WASTE ENERGY MANAGEMENT

SEC. 301. (a) Title II of the Department of Energy Organization Act (15 U.S.C. 7131, et seq.) is amended by adding at the end thereof the following new section:

"OFFICE OF URBAN WASTE ENERGY MANAGEMENT

"SEC. 212. (a) There shall be within the Department an Office of Urban Waste Energy Management (hereinafter in this section referred to as the 'Office') to be headed by a Director, who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall be compensated at a rate provided for level IV of the Executive Schedule under section 5315 of title 5, United States Code. The Director shall be a person who, by demonstrated ability, background, training, or experience, is specially qualified to carry out the activities of the Office.

"(b) It shall be the function of the Office to perform the research, development, demonstration, and commercialization activities authorized under the Municipal Waste-to-Energy Act of 1980.

"(c) The Director shall take all steps necessary to insure that adequate personnel are employed in the Office to carry out its function.

"(d) No individual may carry out the functions of the Director in an acting capacity for any period or periods which, in the aggregate, exceed 90 days.".

(b) Section 5315 of title 5, United States Code, is amended by adding at the end of such section the following new paragraph:

"Director, Office of Urban Waste Energy Management.".

(c) The table of contents for such Act is amended by inserting after the item relating to section 211 the following new item:

"Sec. 212. Office of Urban Waste Energy Management.".

COMPREHENSIVE PROGRAM AND MANAGEMENT PLAN

SEC. 302. (a) The Director of the Office of Urban Waste Energy Management shall prepare a comprehensive program and management plan for the conduct of research, development, demonstration, and commercialization activities under this Act. In the preparation of such plan, the Director shall consult with the Administrator of the Environmental Protection Agency, the Secretary of Commerce, and the head of such other Federal agencies and such public and private organizations as the Director deems appropriate.

(b) The Director shall transmit the comprehensive program and management plan to the Committees on Science and Technology and Interstate and Foreign Commerce of the

House of Representatives and the Committee on Energy and Natural Resources of the Senate within nine months after the date of the enactment of this Act.

(c) Concurrently with the submission of the President's annual budget to the Congress for each year after the year in which the comprehensive plan is initially transmitted under subsection (b), the Director shall transmit to the Congress a detailed description of the comprehensive plan as then in effect, setting forth the modifications which may be necessary to appropriately revise such plan and any changes in circumstances which may have occurred since the plan or the last previous modification thereof was transmitted in accordance with this section. The detailed description of the comprehensive plan under this subsection shall include a statement setting forth (with respect to each of the programs under this Act) any changes in—

(1) the anticipated research, development, demonstration, and commercialization objectives to be achieved;

(2) the program elements, management structure, and activities, including any regional aspects and field responsibilities thereof;

(3) the program strategies and demonstration plans, including detailed milestone goals to be achieved

during the next fiscal year for all major activities and projects;

(4) the economic, environmental, and societal significance which the program may have;

(5) the total estimated cost of individual program items; and

(6) the estimated relative financial contributions of the Federal Government and non-Federal participants in the program.

Such description shall also include a detailed justification of any such changes, a detailed description of the progress made toward achieving the goals of this Act, a statement on the status of interagency cooperation in meeting such goals, and any legislative or other recommendations which the Director may have to help attain such goals.

SCIENTIFIC AND TECHNICAL EDUCATION PROGRAMS

SEC. 303. The Director shall support programs of education in the sciences and engineering to provide the necessary trained personnel to perform the research, development, demonstration, and commercialization activities required under this Act. Such support may include fellowships, traineeships, technical training programs, technologist training programs, and summer institute programs.

FEDERAL COOPERATION

SEC. 304. (a)(1) The Secretary of Commerce, the Administrator of the Environmental Protection Agency, and the heads of other appropriate Federal agencies shall cooperate with the Director to the maximum extent practicable in carrying out his duties under this Act.

(2) The Secretary of Commerce, the Administrator of the Environmental Protection Agency, and the heads of other appropriate Federal agencies shall provide to the Director, upon request, such information in their possession as the Director determines is necessary to carry out his responsibilities under this Act.

(b) The Director may utilize the resources of other Federal agencies and facilities for the purposes of carrying out his activities under this Act.

STUDIES AND DISSEMINATION OF INFORMATION

SEC. 305. (a) The Director shall assure that full and complete information with respect to any project or other activity conducted under this Act is made available to Federal, State, and local authorities, relevant segments of the economy, the scientific community, and the public so that the early, widespread, and practical use of municipal waste-to-energy technologies throughout the United States is promoted to the maximum extent feasible. In carrying out his activities under this section, the Director shall consult and

exchange information with such State and local government agencies as he deems appropriate.

(b)(1) Not later than one year after the date of the enactment of this Act, the Director shall, in consultation with the Administrator of the Environmental Protection Agency and the Secretary of Commerce, prepare and transmit to the Congress a comprehensive report analyzing and assessing the legal obstacles in existing laws, and regulations promulgated under such laws, and other financial, institutional, environmental, and social barriers to the development and application of technologies for energy resource recovery. Such report shall—

(A) identify those particular sections of Federal, State, and local laws, and those particular regulations, whether promulgated or in the proposed stage of implementation, the application of which hinders the use of the best available conventional energy resource recovery technologies, processes, operating methods, and other alternatives and discourages the demonstration of commercially unproven energy resource recovery technologies, processes, operating methods, and other alternatives;

(B) furnish information respecting how and to what extent the technologies, processes, operating

methods, and other alternatives described in subparagraph (A) are hindered and discouraged;

(C) evaluate the relative contribution of such laws and regulations to the national goal regarding protection of the environment in light of any adverse economic and energy effects due to failure to coordinate environmental quality strategies with the goal of expanding the Nation's supply of energy;

(D) recommend methods to develop markets utilizing the energy recovered from municipal wastes;

(E) describe the additional actions which are appropriate to facilitate the ability of Federal agencies to enter into contracts for the purchase of recovered energy or fuel products from an energy resource recovery project or to enter into long term waste disposal contracts to assure an adequate supply of waste for energy resource recovery facility operations;

(F) describe the forms of Federal reinsurance of insurance guarantees which are appropriate to accelerate the rate of development of the resource recovery industry as a whole; and

(G) describe any additional financial or other incentives which may be necessary to accelerate the commercial application of technologies to recover energy from municipal wastes.

(2) In carrying out his activities under this subsection, the Director shall consult with industrial, scientific, and environmental organizations, professional societies and institutions, State and local agencies or organizations, and other sources as the Director deems appropriate.

DISPOSITION OF REVENUES

SEC. 306. Amounts received by the Director as repayments of loans made under this Act, as well as other proceeds from activities undertaken under this Act, shall be deposited into the general fund of the Treasury of the United States as miscellaneous receipts.

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Mr. FLORIO. Without any further delay I would like to call our first witness, Mr. John Millhone, Director of the Office of Buildings and Community Systems, Conservation and Solar Energy of the U.S. Department of Energy.

Welcome to the committee. I ask that you proceed as you see fit. All written statements by witnesses will be entered into the record in their entirety and the witnesses may proceed in a summary fashion as they see fit to do so.

STATEMENT OF JOHN MILLHONE, DIRECTOR, OFFICE OF BUILDINGS AND COMMUNITY SYSTEMS, CONSERVATION AND SOLAR ENERGY, DEPARTMENT OF ENERGY, ACCOMPANIED BY CHARLOTTE RINES, URBAN WASTE PROGRAM, DEPARTMENT OF ENERGY

Mr. MILLHONE. I will thank you, Mr. Chairman, for the opportunity to present the Department of Energy's views on energy and materials recovery from wastes and on H.R. 6638. I would like to introduce Charlotte Rines on my right who is with the urban waste program in the Department of Energy and who serves as a backup source of information.

The statement is organized to present an overall assessment of the current status of the waste energy industry, its potential and problems, and how the Federal Government can develop a pragmatic response to these issues. I will be entering that into the record [see p. 34] and will concentrate more on the financial portions of that statement which deal more specifically with the provisions of H.R. 6638. Initially I would like to make a few comments about the potential for waste energy programs.

The administration has the national energy production goal of 2.5 million barrels of oil equivalent per day by 1990 from synthetic fuels and unconventional gas. There are approximately 150 million tons of municipal solid wastes that are potentially available for energy recovery annually.

If half of those are converted into energy through waste to energy projects, this would yield 250,000 barrels of oil equivalent a day or one-tenth of the national objective.

The table on page 3 of my testimony breaks down that potential by regions. It may be of particular interest to you to look at the potential in the Middle Atlantic region where the total tons available are 16,000 tons potential with 50,000 tons convertible into waste energy projects, which is the highest percentage I believe of any of the regions and reflects the urban concentration that exists in the Middle Atlantic area.

Although this potential is large and promising and important, the current reality in this area is that a relatively small portion of that potential is being realized. If you look over on page 5 you will see that there is a relatively small number of projects currently in existence. Some 10,000 tons of waste daily are being converted into energy.

That is only 3 percent of the potential available energy supply in wastes and the facilities that are in some kind of startup engineering activity, if they were all brought into fruition, would represent only 11 percent of the potential available energy from urban waste.

Although the potential is there, there is clearly a need to look at what can be done to bring forward more rapidly that potential into existing projects. In looking at the provisions of H.R. 6638, I think I should probably state DOE's conclusion first, which is in the last paragraph of the testimony which is that the Department's budgets for fiscal year 1980 and 1981 do not contain funding for the type of program envisioned in H.R. 6638. In light of this and current congressional and administrative efforts to reduce Federal spending, the Department does not support the enactment of H.R. 6638.

I think it is important for me to go beyond that conclusion to talk about some of the provisions of the bill. In part, this is because of the expressed congressional interest in this legislation. In addition, there are numerous attractive provisions of the bill as well as some that DOE would like to consider for possible changes.

The question is, what are the problems that are facing the more rapid commercialization of waste energy projects and to what extent would they be affected by the legislation? Some of the problems confronting waste energy projects are described on pages 5 through 8 of the testimony.

Briefly these are: Our first problem is economic in nature. Data on project cost indicate that in current dollars the capital and operating and maintenance costs are higher than would be economically feasible in the short-run without a fairly significant tipping fee for the use of the urban waste at the waste-energy project site.

A second problem that constrains the development of waste energy projects is local governments' lack of expert resources to understand and undertake such projects.

A final consideration is the issue of risk that can be an obstacle. Although waste-energy technologies have been operating commercially, the operating history has been short; therefore, there is little experience available to predict the behavior of operating and maintenance costs over the expected life of the project.

So, these are the obstacles. We have addressed these obstacles at some greater length in our resource, recovery research and development plans, which, if the committee does not have a copy, we will be glad to provide your staff. In looking at how to move ahead, I think there are three characteristics that need to be considered as essential elements in a governmental program.

The first is some work in the research, development, and demonstration area and the Department of Energy's activities there and the description of the potentials that we see are explained on pages 8 through 11.

A second element is some support for local and State governmental units to enable them to understand what they can do to bring about accomplishments in that area. I think the amendment you sponsored in this area has gone a long way in dealing with that particular problem.

The third area is the one of financial mechanisms, the need for some form of workable financial mechanisms that will make it possible to provide the funding for such projects.

These are the needs and the provisions of H.R. 6638 address these in various ways.

Title I of H.R. 6638 deals primarily with the research, development, and demonstration activities. It is an expansion and some minor reorganization of what is currently being done in that area.

Probably the most interesting provisions of H.R. 6638 are in title II which is the commercialization area. In looking at the commercialization activity, it is important to have a certain set of guidelines that would be desirable for any Federal initiative in this area.

First, Federal support should be premised on obtaining the maximum amount of energy production from technically sound waste-energy projects which can serve a dual function, that is, creation of energy from this resource and also deal with the waste disposal problem.

A second consideration is that the Federal Government must avoid inadvertently institutionalizing the current long lead times typical of past project planning cycles. Federal incentives should reward action and commitment to proceed quickly in local projects.

Federal incentives should not inadvertently delay projects by creating waiting lines for assistance. Your reference to this in your opening statement is certainly very well taken.

Third, Federal emphasis should be to encourage the private sector to develop this resource without the need for continued Federal involvement. In the past, the Federal involvement has focused on the R.D. & D. function. To encourage widespread adoption of waste-to-energy systems, Federal programs must consider the total spectrum of applicability, from planning through R.D. & D., to commercialization.

Here it is important for the program not to discriminate among different positive methods of converting waste to energy.

Finally, the Federal initiatives to support commercial projects should not relieve local project participants of their responsibilities to assure that projects are soundly organized.

Now, in specific comments on some of the provisions of the legislation, although DOE would generally see the order of price supports as being more preferable than loan guarantees and loans and grants, we feel there should be somewhat more flexibility than the order that is contained in the existing legislation.

There is a provision that limits future financial assistance under the act. We feel there should be a little more flexibility there, such that a small amount of additional funds could be provided if necessary to bring projects online. This needs to be looked at very closely.

DOE defers to the Department of Treasury the subject of tax exempt issues which are embodied in the legislation.

As far as title III goes, we believe that it is proper for the urban waste function to report to the Assistant Secretary for Conservation and Solar Energy as it now does rather than creating a new office to report to the Secretary.

In conclusion, the programs discussed provide a framework for achieving the production of 250,000 BOE per day from waste-to-energy. This can be achieved if the energy available in 66 percent of the urban waste stream and 20 percent of the remaining waste is recovered. The program can have an immediate, positive effect on the more than 100 projects that are now in some stage of planning.

On table 14 there is a description of various projects and this includes planning as well as designing and construction phases, so that the numbers here are larger than the 11 percent I mentioned earlier. This represents the potential projects that could benefit from a program of this type.

You may be particularly interested in the figures for the Middle Atlantic area here where there are currently projects in some form of planning as well as design and construction that would process some 40,000 tons a day. That is the largest of any region in the country and is a higher percentage of the available waste in that area.

In conclusion, although the administration cannot support the legislation because of the concern that we have at this time about anything that would increase Federal spending, there are many attractive provisions in the bill as I have outlined. Thank you.

[Testimony resumes on p. 47.]

[Mr. Millhone's prepared statement follows:]

STATEMENT OF

JOHN MILLHONE
DIRECTOR, OFFICE OF BUILDINGS AND COMMUNITY SYSTEMS
U.S. DEPARTMENT OF ENERGY

Mr. Chairman, Ladies and Gentlemen of the Subcommittee, thank you for the opportunity to present the Department of Energy's views on energy and materials recovery from wastes and on H.R. 6638. This statement is organized to present an overall assessment of the current status of the waste-to-energy industry, its potential and problems and how the Federal Government can develop a pragmatic response to these issues..

The conversion of municipal waste-to-energy in the United States has the potential to contribute significantly to the nation's energy production goals. The resource recovery initiative in this country, which began over a decade ago primarily as a means of mitigating the environmental impact of landfill disposal, is now viewed as an important energy resource alternative.

Today, approximately 150 million tons of municipal solid waste are potentially available for energy recovery annually. The processing of slightly more than half of this waste supply by waste-to-energy projects would yield 250,000 barrels of oil equivalent (BOE) per day. The magnitude of this potential resource indicates that wastetoenergy could be a major contributor to the national energy production goal of 2.5 million BOE per day by 1990, from synthetic fuels and unconventional gas. The picture is improved by the potential recovery of energy intensive materials.

Whether we can in fact achieve this contribution depends on the effectiveness of our approach to tackling several serious impediments to the development of waste-to-energy projects.

Steady progress over the past decade in developing and demonstrating waste-to-energy technology has establish the viability of several technologies. These technologies, which have been used in either full-scale commercial facilities or demonstration plants include: mass burning systems; the production of refuse-derived fuel (RDF) for use in dedicated boilers or for co-firing in boilers with conventional fuels; and; small-scale systems using modular, starved air combustion technologies.

Systems operating today process 10,000 tons of waste daily. The scale of these systems ranges from under 100 tons per day (TPD) to over 1,500 TPD. Applications of these technologies include: the production of process steam for industry; electricity production; district heating systems; and RDF as a fuel supplement in coal and oil-fired boilers.

This diversity in scale and application permits matching the waste streams of communities ranging in size from 20,000 persons to the largest cities in the country with the needs of diverse local energy markets to achieve a reliable and economic energy supply. The development of waste-to-energy projects will enable communities in every region of the country to utilize an indigenous energy resource that is replenished day after day. I am submitting for the record a table which shows the daily amounts of waste potentially available for energy recovery by region.

DAILY WASTE GENERATION

(thousands of tons, approx)

Region	Total	Urban
New England	20	15
Middle Atlantic	61	50
E. North Central	67	50
W. North Central	27	18
South Atlantic	55	35
E. South Central	22	12
Mountain	16	12
Pacific	47	40
TOTAL	349	257

Many communities today already perceive energy recovery as an attractive alternative to their present system of landfill disposal. This is particularly true in areas where landfill costs are high (or will increase significantly as a consequence of compliance with new environmental standards) or where requirements for locating new landfill capacity result in both siting problems and increases in costs for hauling wastes over longer distances.

For instance, Detroit is planning a major system that will provide steam for an existing district heating system. We are particularly encouraged by this project since it combines two major production and conservation technologies that DOE is actively developing. DOE has or is developing solicitations under the alternative fuels production program funded by P.L. 96-126. The solicitations for the first two parts of the program, feasibility studies of commercial viability and cooperative agreements for design and other activities leading to construction, were issued on February 25, 1980. So far, 8000 copies of the solicitations have been mailed. At a recent preproposal conference attended by 1000 people, over 100 indicated that they were planning to submit proposals in the municipal waste to energy area.

The loan and price guarantee portions of the solicitation are scheduled to be issued in May and are expected to receive similar response. Several proponents of municipal waste systems have already indicated that they will submit proposals under that program. This clearly indicates interest in support for Federal assistance in this emerging energy alternative.

Problems with conventional disposal methods have motivated many local governments to consider waste-to-energy projects when searching for disposal alternatives that are more economic and offer long-term stability. In fact, over 100 communities are currently in some stage of planning a waste-to-energy project.

In spite of this demonstrated interest, it would be a mistake to interpret these conditions as an indication that the road to rapid exploitation of waste as an energy resource is free of obstacles. Historically, the implementation process for waste-to-energy projects now operating has exceeded 10 years. Moreover, waste processed in existing facilities represents less than 3 percent of the available waste supply. Even after accounting for the processing capacity of additional facilities now in some stage of start-up, construction or design, this figure increases to a modest 11 percent.

Experience from project implementation suggests that the time frame for bringing a facility on-line commercially could be reduced to 6 years or less. However, accelerating the number and speed of implementation of waste-to-energy projects still requires addressing critical economic and resource constraints at the local level. The first problem limiting the development of such projects at the local level is economic in nature. Data on project costs indicate that, in current dollars, the capital and operating and maintenance costs for producing a barrel of oil equivalent from waste are in the $30 to $35 range. While this cost is becoming competitive with the price of imported oil, the economics of a local project still require significant revenues from disposal fees paid by the public in addition to revenues from the sale of an energy product to a local buyer.

Disposal fees are the mechanism for balancing the total revenues of a project with total costs. This economic balance is influenced by two important competitive constraints:

- The price of energy charged by a project to the buyer must be more advantageous than the buyer's alternative fuel costs.
- The disposal fees paid by the public must remain consistent with the cost of the landfill disposal alternative.

This latter condition is often difficult to accomplish in the early years of project operation. Too often, the disparity between projected disposal fees and landfill disposal costs has a negative impact on tax rates and the cost to the public, making the waste-to-energy alternative politically insupportable at the local level. In spite of these early year economics, the life-cycle economics of a project usually compare favorably with landfilling because of escalation in both energy revenues and landfill costs. This "first cost" hurdle that often faces local decisionmakers serves to delay the adoption of waste-to-energy projects.

A second problem that constrains the development of waste-to-energy projects is local government's lack of expert resources to undertake the demanding, time-consuming and expensive process of project implementation. As the supplier of waste to a project and as the entity with ultimate responsibility for waste disposal, local government is a key partner in the implementation process. The public partner is joined in this business venture by the vendor who supplies the technology, the energy buyer who

purchases the product, and the investor who supplies the financing. As a partner, government is motivated to proceed carefully to ensure that the public interest in a project is properly served. Because local governments generally do not have the necessary experts to undertake the project implementation process, they must obtain the outside services of management and engineering consultants and legal and financial advisors. The cost of these services imposes a significant financial burden on the project that is beyond the capacity of many local governments to absorb. In addition, cities find it difficult to raise the funds necessary for preliminary feasibility studies that will identify the technological, institutional, and marketing issues that must be known prior to design, contracting and construction of projects. This is the area supported by the Resource Conservation and Recovery Act of 1976 and the President's Urban Policy grants. The Environmental Protection Agency (EPA) and DOE have entered into a Memorandum of Understanding that EPA is supporting feasibility studies of Resource Recovery projects.

Finally, the issue of risk can also be an obstacle. Although waste-to-energy technologies have been operated commercially, the operating history has been short. Therefore, there is no experience available to predict the behavior of operating and maintenance costs over the expected life of the project. Further, the initial experience with most systems has been erratic and the start-up costs have been highly variable and unpredictable. All of these factors are to be expected in any emerging highly complex technology. Nevertheless, they do inject a major element

of risk in implementing any system. The insufficient experience with existing plants and the need to broaden markets for energy and materials emphasize the need for a strong RD&D program. In this area we have completed the updating of our Research and Development Plan for waste-to-energy and materials systems. It outlines a program for each technology area and will serve as a guide for our future efforts. We continue to pursue various projects attacking specific problems.

In the preprocessing for fuel preparation and materials recovery, the RD&D plan states "Research should be directed at developing a fundamental understanding of unit operations through pilot and full-scale testing so that equipment and plant design can be improved. Such improvements would produce a more consistent fuel and recovered material product and thus increase market confidence. This research should also result in greater availability, reduced redundancy, and lower plant cost."

The DOE currently supports work by the National Center for Resource Recovery (NCRR) which is aimed at improved unit operations. In addition, we have undertaken a comprehensive RD&D effort involving the use of rotary screens as primary separation devices. This program involves the integration of four projects: two are theoretical design and pilot scale verification efforts, and two are full-scale evaluations of operating systems. One project is tied in with developments in Great Britain and will result in the helpful exchange of information in this area. In addition, we are supporting two other efforts to develop new approaches to pre-processing: one is a rotating disc screen; the other uses an explosive decompression process which sizes and de-fiberizes municipal solid waste.

The second area of interest is in thermal systems. Among the needs identified are the development of gasification systems; combustion and corrosion research, and improved environmental control.

The test and evaluation of a bag house for particulate emission control is planned in conjunction with The Tennessee Valley Authority on a new, small-scale combustor. We expect this test will be accomplished during the FY 1981-82 timeframe.

We are also initiating an analysis of the potential for developing a special refuse-derived-fuel (RDF) combustor to broaden the usefulness of that element of the resource recovery field. Such a combustor could be integrated into utility operations, permitting a wider market for RDF. Utilities are now understandably reluctant to introduce RDF fuels into their critical equipment.

Third, the area of co-disposal or co-utilization of solid waste and sewage sludge is of growing interest. We initiated several projects in FY 1978-79 to address this area and expect to complete those efforts during FY 1980.

A fourth area of interest is bioconversion. We are continuing our Pompano Beach project which, as you know, recovers methane from municipal solid waste. The plant is completed and has been producing methane since August, 1978. There have been no problems with the digestion process to date, although we have had a number of problems with the preprocessing plant. These have been solved, and the plant is now operating at design rate.

This effort will continue in Fiscal Year 1981 in order to test digester mixing and to achieve high rate production.

Landfill gas recovery is an element of the resource recovery area about which there is much cause for enthusiams. We are currently supporting 12 projects in this area. According to current experience, this technology appears quite viable, but widespread commercial application is likely to be a number of years away, and a key need is to continue technology transfer. At the same time, there appears to be potential for enhancing gas quality and recovery rate, and to this end, we support four research projects to optimize landfill design for this purpose.

Finally, alcohol technologies have some application in the resource recovery field. Presently, acid hydrolysis and enzymatic hydrolysis are competing technologies, both in terms of end-product (ethanol) and research money. The leading developers of each technology agree that we are at a crossroad and that we should select the most promising technology for commercial development. To achieve this goal, a detailed engineering evaluation of the two technologies is needed. These evaluations, to be undertaken this year, will include development of a conceptual design, preliminary engineering, and capital and operating cost estimates for a commercial-scale facility. Based on this evaluation, one technology can be selected for further development.

In addition, the Department has initiated a program to address energy use in other community functions such as water and wastewater management. Information in this area is scanty, but it is a reasonable estimate that the current annual energy consumption is about 1/3-1/2 quad. However, this consumption often demands 1/4 to 1/3 of municipal energy budgets. For this reason, and because the consumption is expected to grow exponentially by the year 2000, the Department is interested in focusing attention on the subject.

Before commenting on the provisions of H.R. 6638, it is important to outline a set of guidelines we believe desirable in any Federal initiative to support waste to energy initiatives. These guidelines can ensure that Federal involvement occurs with a minimum of disruption in the role and responsibilities of the local participants in project implementation and a maximum encouragement of business decision making.

First, Federal support should be premised on obtaining the maximum amount of energy production from technically sound waste-to-energy projects which serve a dual function of both waste disposal and energy production, there is a national interest in focusing on the energy production function to obtain as much energy as possible from this resource today.

Second, although the learning curve suggests that new projects should proceed more rapidly than their predecessors, the Federal government must avoid inadvertently institutionalizing the long lead times typical of past project planning cycles. Federal incentives should reward action and commitment to proceed quickly by local projects. In addition, Federal incentives should not inadvertently delay projects by creating "waiting lines" for assistance.

Third, Federal emphasis should be to encourage the private sector to develop this resource without the need for continued Federal involvement. In the past, the Federal involvement has focused on the RD&D function. To encourage widespread adoption of waste-to-energy systems, Federal programs must consider the total spectrum of applicability, from planning, through RD&D, to commercialization.

Finally, the Federal initiatives to support commercial projects should not relieve local project participants of their responsibilities for ensuring the projects are soundly organized. Given the state-of-the-art and the positive attitude of systems vendors towards assuming the technical performance risk for their technology, Federal initiatives should reinforce that role, not undermine it.

DOE has been developing ideas to support the commercialization of municipal waste-to-energy systems.

Although price supports, loan guarantees, loans (or cooperative agreements) and grants seem to be appropriate in that order of precedence we do believe that somewhat more flexibility of support than would be provided in H.R. 6638 would be desirable. With specific reference to Section 202 (f) which prohibits future further financial assistance under the Act, while this is desirable in principle, we believe it is a bit too restrictive. We should not doom a project to failure because we cannot provide modest added support where truly unforeseen circumstances occur. At the same time we must not by any means encourage poor planning or underestimation of costs.

DOE defers to the Department of Treasury on the subject of tax exempt issues, such as the language in Section 19y (F) of the Federal Nonnuclear Research and Development Act, P.L. 93-577, as amended, which requires that tax exempt issues be converted to taxable issues at a rate set by Treasury. H.R. 6638 does not address this issue.

As relates to Title III, we believe that it is proper for the Urban Waste function to report to the Assistant Secretary for Conservation and Solar Energy as it does now. The need for cooperation between the Federal Agencies with responsibilities and expertise in this area is self-evident. It is equally evident that while we must learn from the past we must also prepare for the future. Solid waste disposal is yesterdays and todays problem for local government managers. The alternative is to view waste not as a problem but as an underutilized resource to be exploited.

In conclusion, the programs discussed provide a framework for achieving the production of 250,000 BOE per day from waste-to-energy. This can be achieved if the energy available in 66 percent of the urban waste stream and 20 percent of the remaining waste is recovered. The program can have an immediate, positive effect on the more than 100 projects that are now in some stage of planning. As the table which I am submitting illustrates, successful implementation of these projects alone would achieve more than one-half of the 250,000 BOE per day amount.

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PROJECTS IN PLANNING, DESIGN, CONSTRUCTION OR OPERATION

Region	Processing Capacity (000 of tons/day	BOE (000/day)
New England	13	14
Middle Atlantic	40	42
E. North Central	21	23
W. North Central	6	6
South Atlantic	24	25
E. South Central	6	7
W. South Central	6	6
Mountain	3	3
Pacific	16	17
Total	135	143

We are enthusiastic that the program can provide the incentives that make this outcome much more likely than it would otherwise be, as well as create conditions for activating new waste-to-energy projects.

In closing I want to stress that the Department's budgets for Fiscal Years 1980 and 1981 do not contain funding for the type of program envisioned in H.R. 6638. In light of this and current Congressional and Administration efforts to reduce Federal spending, the Department does not support the enactment of H.R. 6638. Also, as you know, the pending Energy Security Corporation legislation would provide for loan guarantees and price supports which might be used for certain types of urban waste/energy facilities.

Mr. FLORIO. Mr. Madigan.

Mr. MADIGAN. Mr. Millhone, the work that we have done previously on resource conservation and recovery has led me to believe that it is as important to get recyclable materials out of the waste stream to be used over as it is to talk about its burning of waste for the production of energy.

For example, I understand that in making aluminum from scrap as opposed to making aluminum from bauxite, the difference in energy consumption is like a 9 to 1 ratio. How do we guard against the possibility of recyclable aluminum being destroyed in a waste-to-energy process?

Mr. MILLHONE. The Department of Energy shares your view that attention should be given to the front-end separation, to the extent that that can be economically done and it is feasible, as well as converting waste into energy. As you mentioned, there is a considerable energy gain in source separation of aluminum and supplies of paper and steel as well where the energy saving is about one-third of what would be required if you obtained these projects from virgin material.

In the design of any community's waste-to-energy project, this needs to be considered along with the potential market for those materials and it probably would be wise to have some undersizing of the waste-to-energy facility so that if in the future it is economically feasible to do more source separation, that could occur without locking in a requirement that all available waste needs to go to the waste-to-energy facility to keep it operating at the maximum rate.

Mr. MADIGAN. Does it seem to you from the study of this that you have done that the more you put on the front end, as you describe it, in terms of requiring separation of material, the less likely it is that the particular waste-to-energy project will be economically feasible?

Mr. MILLHONE. No; the work that we have done indicates that some source separation at the front end is compatible with waste-energy projects. The amounts of waste that are possible to separate at the front end simply need to be taken into consideration in sizing of the waste-energy project.

Mr. MADIGAN. At one time one of the witnesses before our subcommittee on another bill, but dealing somewhat with the same area of interest, indicated that in his judgment a community of 100,000 people would not rate enough waste to make one of these plants economically feasible.

Does the current discussion about these kinds of projects agree with the analysis that that gentleman made to the subcommittee earlier?

Mr. MILLHONE. I would like to see the comment that you refer to so that I could more fully appreciate the context in which it was described. Concern about the size which is economically feasible is something that has received some considerable research activity by DOE to try to make it possible to have economic feasibility for somewhat smaller size units.

In a more direct answer I do not think that the work we have done so far would indicate that there is a sharp cutoff at the

100,000 population community size to make any below that in size economically infeasible.

Mr. MADIGAN. Thank you. I have no more questions, Mr. Chairman.

Mr. FLORIO. Mr. Matsui.

Mr. MATSUI. In your last paragraph of your opening remarks you mention that the administration opposes this particular measure, H.R. 6638, because of our interest in reducing Federal spending. Then you also say in the last sentence that the pending Energy Security Corporation legislation would provide for loan guarantees and price supports which may be used for certain types of urban waste energy facilities.

Now, by mentioning that last sentence, are you saying that the Energy Security Fund is a possible source of funding?

Mr. MILLHONE. The Energy Security Fund is a possible source of funding for some types of projects. In that respect there is some ability to use it or to use the provisions of this legislation to achieve the same objective.

Mr. MATSUI. Are you suggesting by mentioning that in this statement of yours that we ought to pursue that further? Why did you mention that?

Mr. MILLHONE. I thought it would be useful for the committee members to understand essentially three things. One is that DOE's position is not supporting this legislation at this time. Second, we see that the objective of this legislation to some extent can be met by existing and planned legislation. Third, to discuss the legislation and what we see are its advantages and disadvantages.

Mr. MATSUI. Assuming that the Energy Security Fund is in fact passed, would you think that the administration might change its opinion or at least alter its opinion during the course of this year before the end of this session?

Mr. MILLHONE. Based upon what the details are in that legislation as it emerges, the Department of Energy may adjust its position with regard to this bill.

Mr. MATSUI. In other words, you are waiting, pending the Energy Security Fund. So, as far as the priorities that will be met from the funding of the Energy Security Fund, you people have not made any firm decisions yet, so you are going to take a look at this along with all other possible sources? Is that my understanding?

Mr. MILLHONE. That is correct.

Mr. MATSUI. I have no further questions.

Mr. FLORIO. Thank you very much.

I think we all agree with the goal. The question in today's hearing, and all the legislation we are talking about in this area, is whether new initiatives are needed or just consolidation and coordination. I have a 10-page report from the Congressional Research Service which is on the various waste-to-energy programs that are already available.

Do you regard yourself as the lead agency in this whole area in terms of having responsibility for coordinating all these activities?

Mr. MILLHONE. The Department of Energy and Environmental Protection Administration share responsibilities in this area. We have, with which you are undoubtedly familiar, a memorandum of

understanding that divides the responsibility. DOE's particular interest is in waste-energy projects.

We are particularly concerned about the potential energy that can be derived from the urban waste stream. In that area we feel that we have the lead responsibility.

Mr. FLORIO. Would the Conservation and Solar Energy division be superseded by the proposed Office of Urban Waste Energy Management?

Mr. MILLHONE. It is not clear from the legislation where that office would be located. Currently the Urban Waste program is one of the responsibilities of a branch within my office which is within the Office of Conservation and Solar Energy.

So, in all probability there would be some shift in that current method of dealing with urban waste that would come about as a result of this program through the creation of a separate office to whom that office would report to I do not believe is specified in the legislation.

Mr. FLORIO. You said that there is a memorandum of understanding between EPA and DOE. Mr. Madigan's questions were largely directed toward the recycling aspect of this whole question which has a component in the Department of Commerce.

Are there comparable memorandums which have been finally signed between DOE, DOC, and EPA? Is there an integrated effort to get all three departments or all three agencies dealing with all facets of the question of the recycling and the direct generation of energy from solid waste?

Mr. MILLHONE. There is not a memorandum of understanding with the Department of Commerce although we, the Department of Commerce, and EPA are developing a joint 5-year plan for energy recovery from municipal wastes.

Mr. FLORIO. As was indicated in one of the previous questions, we are concerned about the impact of direct energy generation on the recycling component. For example, were your numbers about the barrel of oil equivalency capabilities of solid wastes developed solely on the basis of direct energy production from solid waste or was there an attempt to evaluate the energy savings from recycling and resource recovery in a direct way?

Mr. MILLHONE. The numbers that I cited were those that refer to the direct energy available from urban waste. In addition to those numbers, there were the energy savings that could be achieved through the source separation processes that would not show up as the output of the waste-energy projects.

These would also add significantly to the energy as well as material benefits from a waste-energy project.

DOE does not see its strategy as being concerned only with waste-to-energy projects. We are at least equally interested in prior source separation because of the energy savings that can be obtained by avoiding reliance on materials from virgin material.

Mr. FLORIO. One of the concerns that the committee has is the impact of greater Federal involvement, particularly financial involvement, in the already existing resource recovery industry. We are concerned with inadvertent disruption of the private markets by virtue of subsidies and by virtue of artificially created markets.

The private sector people are also concerned about inadvertent disruption of the private market. I think we have to concede that, in a rapidly developing market, the whole situation is changing. As landfills become more expensive, it becomes more effective to start investing in resource recovery.

As energy prices go up, it is becoming more cost effective to do that. The trend seems to be going in the right way. Many people are concerned that the Federal Government may somehow tilt itself in accordance with its own perception of what is needed. Hopefully that perception is correct; but it is not inevitable that it is correct.

Is that in any way the cause for apprehension by the administration over this bill or is it on the basis of money? Your conclusion seems to imply the latter. Is there any concern on the part of the administration about undoing what apparently is starting to be done in the private sector in this area?

Mr. MILLHONE. Let me add a personal note. I was party to setting up such a source separation center at one time several years ago and have participated in many paper drives as scoutmaster, getting paper for sending youngsters to camp and what have you. So, I have had a good deal of experience and spent a good bit of time in that area.

I think it is an important part of the national waste program. People who have done that have found that to be at times frustrating where you start out your paper drives with paper at $30 a ton but by the time you are through it is $5 a ton. So, the kinds of things you are going to hear later today from Mr. Schneider about what Garden State paper is doing to try to stabilize prices in this area are things that both for personal and departmental reasons we see as an extremely significant and highly commendable contribution that we would like to work with to see that this type of activity is part of DOE's administrative program.

Having said that, there is also a history of many well-intended efforts of this type that have not been successful for one reason or another. So, the Department of Energy is interested in pursuing this activity along parallel lines.

One is to try to encourage and support and recognize the benefits that can be achieved with these kinds of source separation activities up front and at the same time to try to support the waste-to-energy projects that would be, we feel, encouraged by such legislation if there were not currently the financial constraints.

The Department's primary concern, as I indicated, is that the funding is not available at this time for this rather than our view that the legislation be fairly carefully sculptured to not discourage private initiative. The legislation refers directly to the possibility of source separation as something that could be considered for support as well as waste-energy projects themselves.

We feel it does a good job of dealing with the concern that you have expressed.

Mr. FLORIO. Let me set forth a couple of assumptions. Forget about source separation for the moment. Let us forget about the money question. Assume that the money were available. Certainly someone will always accept Federal money; there is no question about that.

The question is: Are things going to go foward, notwithstanding the absence of Federal money, in the way this legislation presents? We have had testimony that says that money is really not the major problem that the private sector people are concerned about, that the situation is changing and they would want certain assurances, the stability of the market, and the removal of some institutional obstacles up front.

They are willing to go forward and invest money under certain circumstances, under certain ideal conditions, and these conditions are starting to develop much more extensively than they have in the past.

My question is: Given the fact that we are removing source separation as a factor and we are removing the availability of Federal moneys, is this type of approach necessary and will it not, in fact, work to the detriment of the whole private sector industry that is already in some cases successful?

Is this not just an effort to provide moneys? Have you made a determination whether that money is going to be used in a cost effective way to bring about more result than if no more money were available? The suggestion has been made that the hope of getting money through these types of programs is causing some to defer the decision to develop a project that they would otherwise make to get into the business right now, if someone did authoritatively say there will be no price supports, no massive Federal grants, no great Federal contribution except in the area of some planning moneys for the purpose of providing local expertise and things of that sort in the way that we have structured our amendment to the Resource Conservation and Recovery Act?

Mr. MILLHONE. The analysis that DOE has made on the financial feasibility of such projects at the present time indicates that many projects face initial cost problems. If you analyze a particular project you find that there are two expenses during the life of a project, initial cost and operating and maintenance cost, and there are two revenue sources.

One is the tipping fee that is received for urban wastes that are deposited at the project. The other is the cost of energy that is derived from the facility. So that by looking at what you expect in the future of those four elements provides an analytical framework in which you can analyze the need for Federal assistance or not.

The captal cost, once made, then becomes a constant. It does not accelerate over time. Your operation and maintenance costs move up at about the same level as the anticipated cost increases.

On the other hand, the tipping fee income has the expectation of rising more rapidly because of the anticipated increased difficulty of finding sites for landfills, particularly in urban areas. In addition, the anticipated cost for energy from the urban waste is expected to accelerate much more rapidly than other costs.

So of the two cost items, one would be steady and one would increase. Of the two income items, both would increase fairly rapidly.

Because of this equation, there is a particular attractiveness in doing something that would help deal with that increase in cost. It is because of that that the legislation that is being considered here is seen by the Department as having very attractive characteristics.

Mr. FLORIO. In conclusion, is it your feeling that without legisla
tion such as this the development of resource recovery facilitie
will go forward at a substantially lesser rate of advancement
To put it the other way, with this legislation, can we look fo
ward to rapid movement ahead in this area?

Mr. MILLHONE. Yes; with this legislation DOE would anticipat
that the advances in this area would occur at a substantiall
higher rate.

Mr. FLORIO. Thank you very much. I have no further question
Mr. Madigan.

Mr. MADIGAN. I would like to clarify one thing, if I could, M
Chairman.

I thought that in response to a series of questions by Mr. Matsu
that in summary you had said the Department was opposing thi
bill but might support it. Is that what you said?

Mr. MILLHONE. I said that the Department currently opposes th
bill because of its financial impact. There is a possibility, depend
ing on the characteristics of the legislation that eventually emerge
on the Energy Security Corporation area, that DOE's positio
would be reconsidered and revised at that time.

Until we see the provisions of such legislation, we do not kno
whether any change in position would be justified and that woul
also involve an assessment of the cost implications and the natur
of the economy at that time as well.

Mr. MADIGAN. But that possible change in position would no
come about by virtue of any changes made in this bill but woul
instead come about by virtue of some possible changes that migh
be made in the Energy Security Corporation?

Mr. MILLHONE. That is correct.

Mr. MADIGAN. Do you anticipate that the changes to which yo
are generally referring are going to take place? Do you have som
reason to believe they might take place?

Mr. MILLHONE. I do not at this time.

Mr. MADIGAN. Could you submit at some convenient time for th
record of the subcommittee, because I notice in your testimony tha
you said that over 100 communities in the United States are a
ready in some stage of developing waste-energy projects—could yo
estimate for the subcommittee at a later time and for our record
how many communities the Department thinks would come int
this in the next 10 years because of this legislation if it were t
become law?

Mr. MILLHONE. Yes.

Mr. MADIGAN. Thank you very much.

[The following information was received for the record:]

Partial List of Waste-to-Energy Project Activity

State	Region	Location	Reported Capacity (Tons per Day)	Status
Alabama	4	Jefferson Co.	1000*	Planning
		Opelika	100*	Planning
Arizona	9	Phoenix	2000	Planning
California	9	Berkeley	200	Planning
		Central Contra Costa Co.	1200	Planning
		Long Beach	800*	Planning
		Los Angeles	2000*	Planning
		San Bernardino Co.	600*	Planning
		San Diego	2000*	Planning
Connecticut	1	Clinton	50	Planning
		Hartford	1400	Planning
		New Haven	1000	Planning
		Windham	50	Planning
Delaware	3	Kent & Sussex Co.	500	Planning
Florida	4	Broward Co.	300	Planning
		Daytona	200	Planning
		Escambia Co.	500	Planning
		Hillsborough Co.	2000	Planning
		Jacksonville	800*	Planning
		Pinellas Co.	2000	Planning
		Walt Disney World	100	Planning
Georgia	4	Dekalb Co.	1000	Planning
		Gainesville	120	Planning
		Lagrange	200	Planning
		Rome	200	Planning
		Savannah	600	Planning
Hawaii	9	Honolulu	1500	Planning
		Kauai	100*	Planning
Idaho	10	Idaho Falls	100*	Planning
Indiana	5	Indianapolis	1800*	Planning
Iowa	7	Blackhawk Co.	300	Planning
		Dubuque	300*	Planning

* Tonnage Based on Population Estimates

Partial List of Waste-to-Energy Project Activity

State	Region	Location	Reported Capacity (Tons per Day)	Status
Kentucky	4	Boll Co.	100	Planning
		Jefferson Co.	1500*	Planning
Maryland	3	Montgomery Co.	1200*	Planning
		Baltimore Co.	600-1500	Planning/Operating
Massachusetts	1	Beverly	500	Planning
		Bolton	1200	Planning
		N. Andover	1200	Planning
		Peabody	100*	Planning
		Springfield	600*	Planning
		Worcester	200	Planning
		128-West	2000	Planning
Michigan	5	Detroit	3000	Planning
		Genesee Township	100	Planning
		Oakland Co.	2000*	Planning
Minnesota	5	St. Paul	1000*	Planning
Mississippi	4	Greenville	125	Planning
		Hattiesburg	300	Planning
		Pascagoula	150	Planning
Missouri	7	Columbia	200*	Planning
		Kansas City	1000*	Planning
		Springfield	300*	Planning
		St. Louis	2000	Planning
New Hampshire	1	Claremont	100	Planning
		Concord	100*	Planning
		Dover/Somersworth	100*	Planning
New Jersey	2	Camden	200*	Planning
		Rockland	200*	Planning
		Mercer Co.	600*	Planning
		Middlesex Co.	1200*	Planning
New York	2	Brookhaven	1000	Planning
		Glen Cove	225	Planning
		Multi-Town	3400	Planning
		New York City	3000	Planning
		N. Hempstead	400	Planning
		Onondaga Co.	1000*	Planning

* Tonnage Based on Population Estimates

Partial List of Waste-to-Energy Project Activity

State	Region	Location	Reported Capacity (Tons per Day)	Status
New York (cont.)	2	Oyster Bay	1000	Planning
		Port Authority/NYC	6000	Planning
		South Bronx (UDC)	3000	Planning
		Utica	200*	Planning
		Westchester Co.	2400	Planning
		South Bronx (Private)	600	Planning/Design
North Carolina	4	Asheville	600	Planning
		Fayetteville	400.	Planning
		Greensboro	1500	Planning
		Henderson/Oxford	100	Planning
Ohio	5	Cincinnati	1000*	Planning
		Cuyahoga Co.	1500	Planning
		Montgomery Co.	1200	Planning
		Toledo	1000	Planning
Oklahoma	6	Tulsa	1000	Planning
Oregon	10	Portland	800*	Planning
Pennsylvania	3	Delaware Co.	1200*	Planning
		Philadelphia	1800*	Planning
Puerto Rico	2	Caguas	150	Planning
		San Juan	1000	Planning
Rhode Island	1		1200	Planning
Tennessee	4	Gallatin	200	Planning
		Knoxville	1000	Planning
Texas	6	Houston	2000*	Planning
		Tarrant Co.	1500*	Planning
		Waco	200*	Planning
Utah	8	Salt Lake City	500*	Planning
Vermont	1	Burlington	100*	Planning
		Rutland	50*	Planning
Virgin Islands	2	St. Croix	100	Planning
		St. Thomas	100	Planning
Virginia	3	Marion (TVA)	150	Planning
Washington	10	Tacoma	500	Planning
		Seattle/King Co.	3000	Planning
Washington, D.C.	3		1500*	Planning
West Virginia	3	Logan Co.	100*	Planning
Wisconsin	5	Wausau	100*	Planning
		Appleton	150*	Planning/Operating

* Tonnage Based on Population Estimates

Mr. FLORIO. Thank you very much.

Our next witness is Mr. Steffen Plehn, Deputy Assistant Administrator of the Office of Solid Waste of the U.S. Environmental Protection Agency.

Mr. Plehn, we are pleased to welcome you back to the subcommittee and look forward to your testimony.

STATEMENT OF STEFFEN W. PLEHN, DEPUTY ASSISTANT ADMINISTRATOR, OFFICE OF SOLID WASTE, ENVIRONMENTAL PROTECTION AGENCY

Mr. PLEHN. Thank you Mr. Chairman.

Mr. FLORIO. Before you start, I would like to utilize your presence here to get an up-to-date report that I understand you are in a position to give on the emergency that occurred this morning at the Chemical Control Corp., in Elizabeth, N.J. This site has been the subject of a great amount of controversy as one of the hazardous waste disposal sites.

Because of inadequacies and deficiencies in the law, a site in the middle of this very congested area is an abandoned hazardous waste site. It is my understanding that a fire broke out and there is a serious situation.

Can you take a minute or two and give us a report on that?

Mr. PLEHN. Yes; the site, as you said, is located on a very small—couple of acre—piece of ground in Elizabeth on the river. The State of New Jersey secured a court order to take control of that site a year ago because of the really very dangerous situation there.

There were I think, something on the order of 40,000 drums of waste stacked four, five, six high plus a warehouse. In the period since then, they have been in the process of analyzing each of those barrels to determine what is in them and to remove the wastes from the site.

They have also been involved in the courts in litigation and on other matters with the owners of the site, which has obviously slowed the process.

What happened is that last night at 11 p.m., a fire broke out in a warehouse on the site. It was a four-alarm fire and produced a very significant plume of black smoke, I am informed. EPA was on the scene. We had a helicopter there which took samples of the plume which are now at our laboratory in Edison to be analyzed.

The situation became worrisome at 4 o'clock this morning. Because of an air inversion, that plume came down close to the ground. As a result of that, decisions were made to cancel schools in Staten Island, Elizabeth, and Linden. Fortunately, at 7 a.m. that inversion moved off, so the plume again rose. I am informed that the fire is now under control.

As I say, we don't have an analysis yet of what the contents of the plume are. I know there are an awful lot of very toxic and inflammable materials there. So, we will just have to find that out.

Mr. FLORIO. The committee would appreciate being kept informed as you monitor it.

Mr. PLEHN. We will be very glad to do that, Mr. Chairman.

Mr. FLORIO. Thank you very much.

Mr. PLEHN. As you suggested, I will try to shorten my testimony. [See p. 61.] I would like to stress that EPA defers to the Department

of Energy for an expression of the administration's position on this legislation.

As you know, solid waste is both a renewable and a noninterruptable source of energy. Every day our Nation's population throws away close to half a million tons of newspapers, cereal boxes, plastic food wrappers, bottles, cans, and every other commodity that man produces.

This municipal solid waste contains 4 trillion Btu's of energy. It is produced day-in and day-out, rain or shine, without interruption. Unlike other potential sources of energy, you don't have to pay a king's ransom to obtain it, but rather you can expect to be paid to take it.

The solid waste that our Nation generates demands that we manage it expeditiously and on a regular basis. The implications of a breakdown in our solid waste management system can be readily seen by looking at the devastating impact of a garbage collectors strike. In just a few short days, our cities become clogged with garbage.

Because of this, municipalities take their solid waste management responsibilities quite seriously. But, by the same token, the solid waste stream can be viewed as a pipeline without a shut-off valve. Taking advantage of its availability and the necessity for its prompt and regular disposal as a source of energy is the kind of practical approach to the development of alternative energy sources that this Nation needs.

As you know, there are presently three Federal agencies with major responsibilities in the field of resource recovery. The Department of Commerce (DOC), the Department of Energy (DOE), and the Environmental Protection Agency (EPA).

DOC's role is primarily one of developing market demand for the materials coming out of our resource recovery plants. DOE's role is primarily one of developing the technology necessary to make energy recovery from waste a viable and efficient industry.

EPA, as the lead Federal agency in resource recovery, brings all the ingredients together to make resource recovery happen. We encourage the communities, in order to meet their responsibilities for effective, environmentally sound management of their solid waste, to utilize the technologies and market opportunities in implementing resource recovery.

Title III directs the President of the United States to appoint a director of an Office of Urban Waste Energy Management in the Department of Energy. DOE will state the administration's position on the desirability and advisability of this move. However, EPA is concerned with the impact title III could have on this balance of responsibilities between EPA, DOC and DOE.

Resource recovery is an important waste management tool. Municipalities will utilize it to fulfill their responsibilities of providing reliable, economical and environmentally sound disposal of the wastes generated by their citizens.

Our concern with the concept of creating an Office of Urban Waste Energy Management in the Department of Energy lies in what message our municipalities may perceive in this. It is important to insure that a proper prospective between waste disposal and energy recovery is maintained, if we are going to rely on our

municipalities to implement the resource recovery systems we so desperately need.

The primary objective that municipalities have in developing resource recovery is in providing an economic, reliable method of disposing of our municipal solid wastes. The responsibility for the collection and disposal of solid waste lies with the local level of government—our cities and counties.

Although some municipalities have chosen to delegate this activity to the private sector, it is still their responsibility to insure that the waste is disposed, every day, at a cost that the public can afford.

These municipal officials are truly concerned about the Nation's energy needs, just as you and I are. But, their primary responsibility is the economic, reliable disposal of the waste. It is on this basis, and with energy recovery only as a secondary benefit, that they will make decisions on how they manage their solid waste.

We must also recognize that despite the size of this resource and its excellent potential as a fuel, this country uses vast amounts of energy. Our solid waste can and should make a positive contribution toward meeting those needs, but its overall contribution will be only a small portion of our total energy needs.

We believe that it is practical to ultimately direct one-half of our Nation's waste to resource recovery facilities. There are other professional analysts that believe that this may go as high as 75 percent, as is currently the case in some European countries.

But, even at this higher rate, and I certainly hope we approach it someday, our municipal solid waste can replace only 1 percent of our Nation's daily consumption of energy. Certainly this is not an amount to be ignored. But, we must be careful to insure that in going after this resource, we do not burden our cities with unreasonable responsibilities or expectations for solving our energy problems at the expense of reliable, economic management of our Nation's solid waste.

We firmly believe that although municipal solid waste cannot, by itself, solve our Nation's crisis in meeting its energy needs, the energy crisis can and is helping to solve our Nation's solid waste management problems by making resource recovery a more economical alternative.

The next section of my testimony talks about the program. You and other members of the committee are quite familiar with that. I will go through the paragraphs which state our philosophy and programmatic approach to this.

Implementing an energy recovery plant is very complex. It requires taking into account a series of technical, marketing, financial, legal, and organizational factors that are new to local governments. Many communities have found it difficult to budget out of their operating funds the several hundred thousand dollars that are necessary to address these factors properly. This is particularly true in our older urban areas where the solid waste disposal problems are greatest and where declining tax bases put great strain on operating budgets.

EPA has therefore concentrated on encouraging and supporting municipal implementation of resource recovery. We have developed a number of programs which are having a profound impact on the

rate of implementation. The authority for our current programs evolves from the Resource Conservation and Recovery Act of 1976 Public Law 94-580.

In that act, Congress directed EPA to develop and implement criteria defining environmentally sound techniques for land disposal of wastes, and to undertake, through the States, a review of all existing land disposal with respect to these criteria.

These regulations will lead communities to commit the resources to properly handle their solid wastes properly. With the demise of open dumping and cheap landfilling, the environment will cease to subsidize land disposal. Hence, resource recovery will no longer have to compete economically with lost costs dumps.

EPA's approach is to provide communities with the necessary tools to remove the obstacles which have impeded resource recovery, and to support those communities in making sound and expeditious planning decisions for the development of waste-to-energy systems.

We believe that source separation is a very important and very useful resource recovery approach. In our present grant assistance to communities under the President's urban program, we have 7 of the 63 grants specifically for the planning of source separation systems.

We also are requiring every community that is considering a waste stream energy recovery facility to examine very carefully the opportunities for conducting source separation as a part of the operation of that facility. Our analyses indicate that there is no incompatibility either from an economic or technical point of view between source separation and energy recovery.

Paper, especially the high grade paper which you would pull out of the waste stream because of its higher market value, would not reduce the Btu production of the plant to a point which would have any material effect on its overall economic functioning or financing.

As I said, my statement goes through the five-part program that EPA is running and I will be glad to answer any questions on that.

Let me close by commenting on title II. Title II provides for financial subsidies of commercial scale projects to convert municipal wastes into energy, or for energy conservation through materials recovery. Mechanisms for support in decreasing order of priority would be price guarantees, loan guarantees, grants, and loans. It is our understanding that this would be a continuing program with an authorization of $100 million per year.

Although DOE will state the administration's position on this title, I would like to offer our own observations. We have always felt that decisions to implement resource recovery should ultimately be made on the basis of their economic attractiveness. Rising costs of alternative disposal by sanitary landfill and increasing values of energy products have combined to make resource recovery economically attractive over a very broad range of situations.

The objective in offering subsidies on what would already be an economically workable system would be to accelerate the rate of implementation. However, we fear that this type of program could have just the opposite effect. In addition to the 5 to 8 years it would take to be able to produce successfully operating plants, this

type of program has an inherent deficiency that may actually slow the rate of development. Communities that might have otherwise moved ahead on their own might not begin construction, until the mechanisms and funding are in place and operating, this bill would not make an authorization available until October 1, 1981, or until they have received their share of the funds.

With limited funds likely to be available, communities may have to "wait their turn" as is currently happening in the construction grants program for waste water treatment plants.

Title II contains a separate section on "Public Acceptance and Utilization, Section 207," which I also feel requires a comment by EPA. This section directs DOE to conduct economic analyses of municipal waste-to-energy technologies and to review foreign technologies which might be utilized in this country.

EPA has comprehensive programs in both these areas that have been underway for some time and that are producing substantial results. Our systems evaluation program is examining technical and environmental performance as well as economic analyses of numerous full scale commercial facilities. To date we have published evaluations of more than a dozen facilities and have recently funded a comprehensive contract to accelerate the evaluation process.

With regard to foreign technologies we have numerous programs already established to track foreign developments and have acted to transfer those technologies that have been identified as having potential for application in this country.

Earlier, I mentioned a recently completed study of European Waterwall Combustion Technology. This study has documented, in a comprehensively designed manual, the technical details of the most successful plants in Europe. We are currently working with the West German Government to evaluate a 200 ton per day pyrolysis plant, and, with NATO to evaluate several codisposal plants in Europe. Thus, section 207 is duplicative of already existing programs.

Mr. Chairman, I thank you for giving me the opportunity to testify at this hearing. I will now attempt to address any questions which you would care to direct toward me.

[Testimony resumes on p. 72.]

[Mr. Plehn's prepared statement follows:]

Testimony of
Steffen W. Plehn
Deputy Assistant Administrator
for Solid Waste

Before the
Subcommittee on Transportation and Commerce
of the
Committee on Interstate and Foreign Commerce
Hearings on the
"Municipal Waste-to-Energy Act of 1980 (HR 6638)"
April 22, 1980

Mr. Chairman, I am Steffen Plehn, Deputy Assistant Administrator for Solid Waste of the U. S. Environmental Protection Agency, I thank you for this opportunity to present our views on the "Municipal Waste-to-Energy Act of 1980 (HR 6638) which you are considering. At the outset, however, I stress that EPA defers to the Department of Energy for an expression of the Administration's position on this legislation.

Solid waste is both a renewable and a non-interruptable source of energy. Every day our Nation's population throws away close to half a million tons of newspapers, cereal boxes, plastic food wrappers, bottles, cans and every other commodity that man produces. This municipal solid waste contains four trillion BTU's of energy. It's produced day-in and day-out, rain or shine, without interruption. And unlike other potential sources of energy, you don't have to pay a king's ransom to obtain it, but rather you can expect to be paid to take it.

The solid waste that our Nation generates demands that we manage it expeditiously and on a regular basis. The implications of a breakdown in our solid waste management system can be readily seen by looking at the devastating impact of a garbage collectors strike. In just a few short days our cities become clogged with garbage. Because of this, municipalities take their solid waste management responsibilities quite

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seriously. But by the same token the solid waste stream can be viewed as a pipeline without a shut-off valve. Taking advantage of its availability (and the necessity for its prompt and regular disposal) as a source of energy is the kind of practical approach to the development of alternative energy sources that this Nation needs.

As you know, there are presently three federal agencies with major responsibilities in the field of Resource Recovery. The Department of Commerce (DOC), the Department of Energy (DOE), and the Environmental Protection Agency (EPA).

DOC's role is primarily one of developing market demand for the materials coming out of our resource recovery plants; DOE's is primarily one of developing the technology necessary to make energy recovery from waste a viable, efficient industry. EPA as the lead federal agency in Resource Recovery brings all the ingredients together to make resource recovery happen. We encourage the communities, in order to meet their responsibilities for effective, environmentally sound management of their solid waste, to utilize the technologies and market opportunities in implementing resource recovery.

Title III

Title III directs the President of the United States to appoint a Director of an Office of Urban Waste Energy Management in the Department of Energy. DOE will state the Administration's position on the desirability and advisability of this move. However, EPA is concerned with the impact Title III could have on this balance of responsibilities between EPA, DOC and DOE.

Resource Recovery is an important waste management tool. Municipalities will utilize it to fulfill their responsibilities of providing reliable, economical and environmentally sound disposal of the wastes generated

by their citizens. Our concern with the concept of creating an Office of Urban Waste Energy Management in the Department of Energy lies in what message our municipalities may perceive in this. It is important to insure that a proper prospective between waste disposal and energy recovery is maintained, if we are going to rely on our municipalities to implement the Resource Recovery systems we so desperately need.

The primary objective that municipalities have in developing resource recovery is in providing an economic, reliable method of disposing of our municipal solid wastes. The responsibility for the collection and disposal of solid waste lies with the local level of government - our cities and counties. And although some municipalities have chosen to delegate this activity to the private sector, it is still their responsibility to insure that the waste is disposed, every day, at a cost that the public can afford. These municipal officials are truly concerned about the Nation's energy needs, just as you and I are, but their primary responsibility is the economic, reliable disposal of the waste. And it is on this basis, and with energy recovery only as a secondary benefit, that they will make decisions on how they manage their solid waste.

We must also recognize that despite the size of this resource and its excellent potential as a fuel, this Country uses vast amounts of energy. Our solid waste can and should make a positive contribution toward meeting those needs, but its overall contribution will be only a small portion of our total energy needs. We believe that it is practical to ultimately direct one half of our Nation's waste to resource recovery facilities. There are other professional analysts that believe that this may go as high as 75 percent, as is currently the case in some European countries. But even at this higher rate, and I certainly hope we approach it someday, our municipal solid waste

can replace only one percent of our Nation's daily consumption of energy. Certainly this is not an amount to be ignored. But we must be careful to insure that in going after this resource we do not burden our cities with unreasonable responsibilities for solving our energy problems at the expense of reliable, economic management of our Nation's solid waste. We firmly believe that although municipal solid waste cannot, by itself, solve our Nation's crisis in meeting its energy needs, the "energy crisis" can and is helping to solve our Nation's solid waste management problems by making resource recovery a more economical alternative.

EPA's Resource Recovery Program

I would like to quickly review for you EPA's current programs for encouraging municipalities to implement resource recovery systems. Our responsibility is the protection of the Nation's environment. Municipal solid waste, because of the vast volume of material produced and the breadth of its contents, creates a significant potential for environmental impact. As I said earlier, every item man produces, from nickel-cadmium flashlight batteries to the most toxic industrial chemicals, ultimately makes its way into our Nation's garbage trucks.

Congress recognized the magnitude of this problem 15 years ago. It passed the Solid Waste Disposal Act of 1965 (P.L. 89-272), creating a national program to help cities cope with a growing solid waste burden. At that time, the term resource recovery was not even in our vocabulary. We burned our solid waste, not to reuse its energy, but to reduce its volume. Veteran members of this committee may remember the billowing black smoke that rose from the Kenilworth dump each afternoon at five o'clock and engulfed Capitol Hill whenever the wind was out of the east.

Our initial approach to the problem was to launch a broad research, development, and demonstration program in order to come up with the technological tools to manage solid waste. By 1968 we were working with a number of concepts to extract energy and materials from municipal solid waste.

In just ten years, our research, development and demonstration and evaluation efforts, along with those of other Federal agencies and private industry, have resulted in the creation of a technological base that can now satisfy the resource recovery needs of the immediate future. By no means have we done all we need to do in developing technology. That process is still continuing; and under the auspices of DOE there should evolve new and better technologies. We now feel, however, that there is a strong enough technological base available for communities to implement resource recovery without assuming unnecessary or unreasonable risks. Risk can be mitigated if these systems take advantage of experiences and data gathered from other earlier efforts.

Implementing an energy recovery plant is very complex. It requires taking into account a series of technical, marketing, financial, legal and organizational factors that are new to local governments. And many communities have found it difficult to budget out of their operating funds the several hundred thousand dollars that are necessary to address these factors properly. This is particularly true in our older urban areas where the solid waste disposal problems are greatest and where declining tax bases put great strain on operating budgets.

With that in mind, EPA has concentrated on encouraging and supporting municipal implementation of resource recovery. We have developed a number of programs which are having a profound impact on the rate of implementation.

The authority for our current programs evolves from the Resource Conservation and Recovery Act of 1976 (P.L. 94-580). In that Act, Congress directed EPA to develop and implement criteria defining environmentally sound techniques for land disposal of wastes, and to undertake, through the States, a review of all existing land disposal with respect to these criteria. The impact of these regulations will be to lead communities to commit resources to properly handle their solid wastes. With the demise of open dumping and "cheap land-filling," the environment will cease to subsidize land disposal. Hence, resource recovery will no longer have to compete economically with low costs "dumps."

EPA's approach is to provide communities the tools necessary to remove the obstacles which have impeded resource recovery, and to support them in making sound and expeditious decisions on planning for the implementation of waste-to-energy systems. Toward this end, our Agency has instituted a five-pronged program of assistance.

First, the President recognized the waste-to-energy needs of our urban areas when he presented his Urban Policy message in March 1978. Using authorities provided by RCRA, the President requested and received funds from Congress to provide direct assistance to communities to aid them in planning for the implementation of resource recovery systems. Sixty-three communities in 37 States are sharing $35 million in funding, including $10 million in the President's FY'81 budget request to Congress. A diversity of communities and projects are now being supported by the program. For example, the port Authority of New York and New Jersey is being assisted in developing two large industrial parks using the attraction of reliable and reasonably priced energy from large-scale waste-to-energy facilities. On a smaller scale, but equally applicable to communities across the Nation, the City of

Clairmont, New Hampshire is being aided in analyzing waste-to-energy options for the environmentally sound disposal of waste from a medium-sized community. These 63 projects are developing systems which will have the capacity to receive 20 percent of our Nation's municipal solid waste.

EPA is managing all of the 63 Urban grantees very closely in an effort to assure the maximum rate of successful resource recovery project implementations. Even as early as the selection process, teams of experts from EPA Washington and Regional Offices, the appropriate States, and the Department of Energy contributed to a very detailed screening process to choose the communities with the greatest potential for success. Since that time, our Regional Staffs and Technical Assistance Panels Contractors have mounted an intensive effort to assist, manage, and evaluate these projects on an ongoing basis. This program while only recently underway, is having a significant impact on the resource recovery industry. Municipal officials are armed with greater skills and self-confidence in dealing with the complex issues associated with implementing a resource recovery system. Decisions are being made more quickly and with greater conviction. System vendors are able to communicate and negotiate better and faster when the municipality knows what it is doing. We are confident that this financial assistance program and its associated support efforts will greatly accelerate the rate of immplementation and reduce the frequency and magnitude of problems that have arisen with previous implementations.

The second prong of the EPA program supporting State, local, and even Federal agency efforts to implement resource recovery is the Technical Assistance Panels Program. This program, which is managed through the ten EPA Regional Offices, provides staff and consultant expertise to help agencies in solving their resource recovery problems. Since its initiation in 1978 this program

has assisted more than 250 communities in addressing problems concerning resource recovery.

Auburn, Maine is an excellent example of one such community. Auburn was faced with a serious shortage of landfill space, but, due to environmental constraints, was unable to site a new landfill. Although the city officials knew they wanted a small scale energy recovery system, they lacked the expertise to implement a system. EPA, using its Technical Assistance Panels contractors helped them to write a request for proposals and to evaluate responses. Construction of the facility is now underway and startup is expected in November.

Third, we are encouraging the States to take a more active role in the development of resource recovery projects. Planning at the State level is another important element of EPA's overall resource recovery program focus. Under RCRA, States are provided funding to develop comprehensive State plans dealing with all areas of solid waste management, including resource recovery. Planning requirements established by EPA include specific actions regarding resource recovery, including removal of State laws which make contracting for resource recovery services difficult. In additon, we have drafted a guide explaining how the States can go about providing technical assistance, financial assistance, information dissemination, and other services to help aid their local communities in implementing resource recovery. Some states have even gone so far as to establish Resource Recovery Development Authorities with bonding power to finance waste-to-energy projects.

Fourth, in addition to providing direct assistance, EPA also conducts an extensive program of information development and dissemination. We support numerous evaluations and studies in order to generate factual, detailed data for use by decision makers and officials responsible for

implementing those decisions. We have just recently completed two extensive, technical evaluations of waste-to-energy systems which have widespread interest. One examined the small modular incinerators which have been outfitted with waste-heat boilers to recover steam and the other looked at European advances in the development of larger scale waste-to-energy systems. I will come back to this latter study when I discuss Title II.

Fifth, two effective tools with which EPA is able to convey resource recovery information are our program of resource recovery seminars and workshops, and our newly developed "Resource Recovery Management Model." During the past three years over 2,500 Federal, State, local, and private decision makers have received a two-day resource recovery overview from our implementation seminar program. This program, which has been very favorably received, has encouraged certain communities to proceed with resource recovery projects; we also know that, appropriately, it has discouraged some communities that are not yet ready for resource recovery.

We have recently begun a new program of Workshops that takes our information dissemination objectives a step further. This program addresses the needs of the many communities actually proceeding with resource recovery implementation efforts. It provides mid-stream guidance on the actual problems and issues that municipal officials and their consultants must face in implementing their projects. Participants in the workshops are introduced to the "Resource Recovery Management Model." The model, developed with the advice of recognized experts who have been involved in past resource recovery implementation efforts here in the United States, clearly delineates each step necessary to bring a project from an idea to a reality. We expect this tool to be instrumental in expediting the implementation process in this Country.

It is apparent from my comments here today and the programs that I have described, that EPA is firmly committed to the concept of resource recovery as the preferred approach for managing our Nation's municipal solid waste. We strongly believe that it is in our Nation's best interests, from both an environmental protection perspective and an energy development perspective, to accelerate resource recovery implementation to the maximum extent practicable.

Title II

Title II provides for financial subsidies of commercial scale projects to convert municipal wastes into energy (or for energy conservation through material recovery). Mechanisms for support, in decreasing order of priority would be price guarantees, loan guarantees, grants, and loans. It is our understanding that this would be a continuing program with an authorization of $100 million per year.

Although DOE will state the Admininistration's position on this Title, I would like to offer our own observations. We have always felt that decisions to implement resource recovery should ultimately be made on the basis of their economic attractiveness. Rising costs of alternative disposal by sanitary landfill and increasing values of energy products have combined to make resource recovery attractive over a very broad range of situations.

The objective in offering subsidies on what would already be an economically viable system would be to accelerate the rate of implementation. However, we fear that this type of program could have just the opposite effect. In addition to the five to eight years it would take to be able to produce successfully operating plants, this type of program has an inherant deficiency that may actually slow the rate of implementation. Communities, that might have otherwise moved ahead on their own, might wait to commit to

construction 1) until the mechanisms and funding are in place and operating (this Bill would not make an authorization available until October 1, 1981) and 2) until they have received their share of the funds. With limited funds likely to be available communities may have to "wait their turn" as is currently happening in the construction grant program for wastewater treatment plants.

Title II contains a separate section on "Public Acceptance and Utilization (Section 207)" which I also feel requires a comment by EPA. This section directs DOE to conduct economic analyses of municipal wast-to-energy technologies and to review foreign technologies which might be utilized in this Country. EPA has comprehensive programs in both these areas that have been underway for some time and that are producing substantial results. Our systems evaluation program is examining technical and environmental performance as well as economic analyses of numerous full scale commercial facilities. To date we have published evaluations of more than a dozen facilities and have recently funded a comprehensive contract to accelerate the evaluation process.

With regard to foreign technologies we have numerous programs already established to track foreign developments and have acted to transfer those technologies that have been identified as having potential for United States application. Earlier I mentioned a recently completed study of European Waterwall Combustion Technology. This study has documented in a comprehensive design manual the technical details of the most successful plants in Europe. We are currently working with the West German Government to evaluate a 200 TPD pyrolysis plant and with NATO to evaluate several co-disposal plants in Europe. Thus, Section 207 is duplicative of already existing programs.

Mr. Chairman, I thank you for having given me the opportunity to testify at this hearing. I will now attempt to address any questions which you would care to direct toward me.

Mr. FLORIO. Thank you very much.

Mr. Madigan.

Mr. MADIGAN. On page 7 of your statement if I might quote it, it says: "These 63 projects are developing systems which will have the capacity to receive 20 percent of our Nation's municipal solid waste." It would seem if we can use a multiple of 5 that 5 times 20 is 100 and using 5 times 63 is about 300.

Would it be fair for me to say that if we had 300 projects going like this that we would be able to dispose of 100 percent of the Nation's municipal solid wastes?

Mr. PLEHN. I think the first point is that the waste in urban areas, where you can collect a significant volume of waste in a reasonable geographic proximity, has a stronger potential for resource recovery, certainly in the energy production form, than it would, say, in the rural areas of Wyoming.

I would think that resource recovery in very rural areas, other than through source recovery mechanisms, is far down the pike. That is why we talk of 50 percent to 75 percent being the range where we think it is reasonable to expect progress.

I would point out that we received applications from 207 communities for grants under this program. We were able to make grants only to those 63 communities that we felt had the most significant potential for implementation success in the short run.

I guess the third point can be illustrated by considering New York. New York has about 22,000 tons of waste per day that is produced. Development is presently underway, I believe on six separate resource recovery plants. There will still be garbage left looking for a plant to go to after those projects are over, when those efforts are completed.

The long and short of it is that I do not think 100 percent is a reasonable goal but I think that there are communities out there, as indicated by the applications in our program, that are very eager to move ahead and would like to move ahead.

Mr. MADIGAN. When you chose 63 of the 207, did you restrict yourselves to 63 because of the availability of funds?

Mr. PLEHN. In essence, that would be correct. We had a commitment in the President's Urban Message for a 3-year $45 million program. In actual fact, it will be a $35 million program if the Congress appropriates the funds that are requested in the 1981 budget.

But we did feel that that was the number of communities that we could effectively support within the funding levels available.

Mr. MADIGAN. If you had had the money with regard to the other 144 applications, would you have funded them? What I am asking you in that question is: Did they impress your agency as being economically viable and worthy of funding if funding had been available to you?

Mr. PLEHN. I think we would not have funded all of them but we would have funded additional ones.

Mr. MADIGAN. Enough to get you to your 50- to 75-percent figure?

Mr. PLEHN. I do not believe that would have been the effect of that, no.

Again, the reason for that is that current activity includes quite a few of the major cities—Detroit is just about to go into construction, Chicago has two plants and it is working on a third. I mentioned the six in New York. Philadelphia is working on its first plant.

In some cases we have cities that are saying, "We have to get in. Let us do one right. Let us make sure it works before we move on to the next plant." That is where a lot of the waste which is not presently being planned for is located.

Mr. MADIGAN. I guess that there would be waste in municipalities which we could never get to with a program of this kind because there would be no use for the energy that would be generated. For example, in a warm climate where a community had a contract for the supply of electric power which it could not abrogate, presumably they would not be able to use the energy that they would generate from the waste. Is that correct?

Mr. PLEHN. I think that is not quite correct. You have put your finger on it in recognizing that markets for the energy product are a very critical, perhaps the most critical, implementation step in putting one of these plants on line.

For instance, Dade County, which includes the city of Miami, is in the process of building a 3,000-ton-per-day plant. Nashville, Tenn., has a significant plant. In that case they provide steam to a municipal steam loop. I think in Dade County they are going to generate electricity.

There are several other facilities under development in Florida including one in the Fort Lauderdale area.

There are markets in all parts of the country. It sometimes takes a lot of work to make them actually happen.

Mr. MADIGAN. I assume from your testimony that providing the kind of assistance to find a use for this as well as providing the assistance to show communities how to do it in a profitable way is the primary role of the Federal Government at this point in time.

Mr. PLEHN. As far as EPA's program is concerned, we are in an assisting-and-facilitating role both by providing dollar resources so that a community can put one or two people full time on this, so that they can really track it and work it day in and day out and then, just as importantly, providing a whole range of technical support in terms of experience gained elsewhere as to how you move ahead.

For instance, we give the community sample contracts which have been worked out on the basis of months of negotiation in other parts of the country which deal with apportioning the risks that are inherent in this kind of project, let us say between the energy purchaser, the municipality and the vendor who might be providing the systems.

This is very complex stuff. What we are trying to do is to get the communities high up on the learning curve very fast so that everyone does not have to go at this on a trial-and-error basis.

Mr. MADIGAN. Thank you, Mr. Chairman.

Mr. FLORIO. Mr. Matsui.

Mr. MATSUI. Thank you, Mr. Chairman.

Just from your comments, it seems that you would not favor this particular proposal as set forth in this bill. Is that correct?

Mr. PLEHN. We would defer to the Department of Energy. We want to offer some observations from the EPA point of view.

Mr. MATSUI. If the bill were changed to have EPA actually operate the program, would your opinion be somewhat altered or would it remain the same?

Mr. PLEHN. I believe it would remain the same.

Mr. MATSUI. In other words, you feel that the current course of action by EPA is sufficient at this particular time?

Mr. PLEHN. I would not suggest that what we are doing is fully sufficient. I think that the concern that I express about the wait-in-line syndrome, which is inherent in any grant-in-aid program, would still remain.

Mr. MATSUI. I have no further questions.

Mr. FLORIO. Thank you.

I would just like to ask a couple of questions and particularly to try to clarify some points that I really do believe need clarification.

I think we have to make a distinction between a publicly initiated project and a fully commercial program. A town creates an authority. Their main motivation, if my experience reflects reality, is that they are trying to deal with the disposal problem. They are running out of landfill and they want to deal with the disposal of solid waste.

They then tend to make this project cost-effective, not necessarily cost-effective in terms of profit. When we are talking about market for the product, we are not talking about a salable market. We are not talking about making money. We might say we can generate steam out of this and then heat the highway complex or take care of some of our governmental energy needs.

The whole thing goes forward without a commercial aspect to this type of program. That is to be distinguished from a fully commercial program where XYZ Corp. decides they can make some money and serve a public purpose as well by signing a contract, getting the solid waste from the community, and then perhaps taking the energy that is generated and either making electricity out of it, selling it off to a utility or in fact selling the steam off to a company such as is done in Saugus at that facility.

Are there two different approaches that have to be followed for those two types of programs or projects? Most of what you have talked about and the 63 planning grants I perceive as being the former type of project, that is, helping municipalities to get the expertise to deal with their types of problems as opposed to providing planning grants to a commercial firm.

Are any of those planning grants given to commercial firms?

Mr. PLEHN. No, sir; but I am not sure I would exactly agree with your distinction with respect to the second part. I am also not sure I agree with you on the first part.

I think the community that is going to provide steam or a highway complex is going to look at what it will cost to do it this way as opposed to the other way. It will be concerned about budgets and be concerned about economics.

Mr. FLORIO. Let us assume ideally that they cannot save money in terms of the heating aspect. Let us assume they do not save any money but when they compute the whole picture, they decide they can deal with their solid waste problem and in a sense kill two

birds with one stone, maybe deal with their sludge problem as well, that the overall picture may be socially desirable and therefore they would make the decision, even though it does not have any appreciable impact in cost saving in terms of the amount of oil it would cost to heat the highway complex.

Mr. PLEHN. I think that is quite right. I think they will be looking at the cost of all these elements and they will be trying to find the most cost-effective solution to meeting all these objectives.

Let me go to your second point. A community that wants to move in the resource recovery direction has two ways to go. One way is that they can seek to develop a RFP and negotiate with a system vendor that may represent one of the European waterwall systems or one of the U.S. RDF systems, negotiate a contract which allocates costs and risks and all of that and then let the vendor go ahead.

The other way to do it, and we are supporting those under our program too, is to develop an approach which assumes that an architectural/engineering firm will come in and design a plant to do the job. It is not necessarily someone who is a system vendor but it is someone who has the capability and the experience to design RDF plants or even an incinerator plant.

So they can go in one of those two directions. In both cases, though, the community has the responsibility of understanding really what it wants to do and putting itself in a strong technical position for negotiating with whomever, and that is what we are trying to do.

Mr. FLORIO. It is the latter approach that I am most concerned about. That is, the community deciding that they will form an authority, and hire the architect. The architect or the engineer comes in and constructs the facility and then the authority goes forward and tries to operate this.

Where I come from, the experience has not been good under those approaches in the past. As a matter of fact, in 1970 EPA sponsored a construction program of a number of these facilities. My recollection is that for the most part they were this type of local authority-based facility.

My understanding is that there was a high degree of success with those past construction programs.

Mr. PLEHN. Mr. Chairman, let me correct the record on that. The objective of our program in the mid-1960's was principally to take pilot level resource recovery technologies and provide the necessary subsidization so that they could be constructed and operated on a commercial scale.

The objective there was to provide some money to take some of the risks so that some bigger plants could be run so that we could learn from them. Some of those plants quite understandably had operating difficulties. That is what you would expect when you move forward with that kind of research and development program.

But in that program we dealt with system vendors too. The plant in Baltimore, the pyrolysis plant, was a contract involving EPA and the city of Baltimore and the Monsanto Co. That was a proprietary technology of theirs at that point.

Mr. FLORIO. What you are saying is that you do not try to tilt in any particular direction in terms of the private development or public sponsorship, utilizing private contracting to operate. In fact, if the local authority decides that they want to go into the business, hire the architect, the engineers, and then operate, you do not feel that that is something that you should become involved in?

Mr. PLEHN. We do not believe that is our responsibility. We have a responsibility to advise communities of the pros and cons of the different approaches and we do that in our resource recovery seminars and other workshops. If you are interested I will provide for the record what we say to people on that choice.

But we think that is their responsibility to make that decision. It is our job to help them make it in an informed way.

Mr. FLORIO. We have the responsibility, particularly in the context of this legislation to insure that the Federal support that is provided is cost effective. I think we also have the responsibility to analyze what the experience has been and recommend such an approach, if we find that there is a preferred way to achieve success.

For example, in title II of this proposal, DOE shall operate and manage projects in the event of a default. How would you think this would impact on the development of the resource recovery industry? Are not we in a sense guaranteeing someone who comes in that someone is going to be there to pick up if they go under?

Is that not going to have any impact on the decisions that companies have already made and, in a sense, the industry's development? The people coming in now are not going to be put to the hard test and rise and fall on their own merits; they know there is somebody there that will pick up the project.

Mr. PLEHN. The effect of that kind of provision is to shift some significant portion of risk potentially away from the vendor and the community and to the Federal Government.

Mr. FLORIO. I am going to ask a question and, if you can, provide us an answer for the record because I understand you may not be in a position to answer it.

My understanding is that recently there have been some reports out of the Hemstead facility that there are some toxic materials being generated. Specifically dioxin has been mentioned which is an extremely hazardous material.

Also, it was reported to me that FAA has stated that the facility is causing some problems in regard to the employees. Do you have any information on this and if you do, we would like to hear it. If not, we would like for the record to receive your thoughts as a result of your investigation into the allegations of this particular situation.

Mr. PLEHN. I will be very glad to supply that for the record.

[The following information was received for the record:]

EMISSION OF DIOXINS AT THE HEMPSTEAD (N.Y.) RESOURCE RECOVERY FACILITY

In 1979, EPA contractors sampled the emissions from the Hempstead Resource Recovery Plant in Hempstead, L.I. This was done at the request of the New York Department of Environmental Conservation in response to complaints from area residents of eye irritation and odors believed to be associated with the plant's operation. The objective was to characterize the hydrochloric acid and organic emissions from the plant to determine if a cause for the odor problem could be identified.

The sampling was carried out on six separate days while only one of two plant boilers was operating. Because the main goal was to identify the odor problem, the sampling program was designed to produce only qualitative and semi-qualitative results, not a detailed quantitative profile of the plant's emissions.

Not all the samples collected have been completely analyzed, and some results remain to be verified. The results so far, however, may be summarized as follows:

1. Chloride and sulfur oxides emissions were at low concentrations. Total organic emissions averaged 26 lb/hr during the sampling period. While several potentially hazardous compounds were identified, calculated human exposures for these compounds were were well below the known threshold levels for health effects.
2. Concentrations of formaldehyde (analyzed as formate - which had been suspected as a possible source of odor) in the emissions were such that predicted levels in the surrounding areas would be below either health effect or odor thresholds.

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3. The presence of chlorinated phenols was detected. Because these compounds can be precursors for the formation of TCDD (dioxin), further analysis was carried out on some of the samples. This analysis showed that some dioxin was being emitted, but further testing will be required to determine concentration.

The sampling for organic emissions including dioxin was carried out in two days. There is no assurance the composition of the feed to the unit was typical, nor that the operating conditions were "normal". There is no evidence that the sampling results represent a continuing situation.

The facility currently is shutdown for unrelated reasons. In addition, before the plant can be restarted 43 modifications to the facility must be made under a State Administrative Consent Order. After these modifications have been made and the plant restarted, the EPA will implement a testing program aimed at verifying the earlier results and determining if organic emissions are a continuing problem. The EPA also plans to test other waste combustion facilities to determine if they emit trace organics.

Mr. FLORIO. I have no further questions. Mr. Madigan.

Mr. MADIGAN. Mr. Chairman, may I ask one question about this facility in New Jersey that you asked about in the beginning? Did you indicate that the State had successfully taken over that facility 1 year ago?

Mr. PLEHN. I am not totally up on the details but I can say generally the State received a court order about 1 year ago that it was to take control of the facility in order to safeguard the health of the people nearby and the environment, and they have been undertaking cleanup efforts there over the last year within the funds that have been available to them which have been limited.

Mr. MADIGAN. The State has been doing that?

Mr. PLEHN. Yes.

Mr. MADIGAN. They are onsite and they have been doing this?

Mr. PLEHN. Yes.

Mr. MADIGAN. Does that State have a law empowering it to do that and appropriating money to it for that purpose?

Mr. PLEHN. It is my understanding that the State of New Jersey was able to use some funds available to it as part of its oilspill cleanup fund but I know that it was only a very small portion of the funds that would have been needed to have in fact cleaned up that site during this past year.

Mr. MADIGAN. You are not aware of whether or not that particular State has a fee on chemical companies or on anyone else for the specific purpose of establishing a fund to take care of problems like this?

Mr. PLEHN. I am not aware of that. I believe they do not but I am not aware of that.

Mr. MADIGAN. Thank you.

Mr. FLORIO. If I could amplify the record a bit, as you may recall this is something which has been an issue for a number of years. The State of New Jersey went into court to get the order, which took a substantial period of time even though everyone acknowledged that this site is hazardous, and is located in the middle of a large urbanized area immediately across the river from New York City.

As a matter of fact, part of the problem today is that the cloud might be descending on Staten Island. Even though this site was categorized as an imminent hazard, litigation was required to get a court order to give the State some authority to secure the site.

The owner apparently is not financially responsible. He is making the claim that he is not responsible. The State law, which is an oil cleanup spill fund, had to be tortured to tap into those moneys. These moneys are not very substantial.

The main difficulty is that the money is needed to analyze what is in the different drums. Likewise there is a question with regard to appropriate disposal methodologies.

Mr. PLEHN. If I may just add, I think that the administration's proposal of the superfund is premised on two important initiatives which could have been very useful in this specific situation. One would be the authority to go in and clean up a site like this and then argue afterward in the court as to where the funds are going to come from and who has what kind of responsibility. Without

that authority the State of New Jersey has not been able to move ahead.

Second, to have a pool of resources which one can draw on to effectuate that kind of cleanup. As I have said, that has not been available. So, I think is a very concrete example of the kind of situation for which we really desperately need some kind of superfund mechanism.

Mr. FLORIO. I had not thought about the connection but thank you very much.

Mr. PLEHN. Thank you, Mr. Chairman.

Mr. FLORIO. I would like to call our next witness, Mr. Charles Johnson, the technical director of the National Solid Waste Management Association. My understanding is that he is accompanied by Mr. Jeff Diver, senior environmental counsel of Waste Management, Inc., Oak Brook, Ill.

Gentlemen, we welcome you.

STATEMENT OF CHARLES A. JOHNSON, TECHNICAL DIRECTOR, NATIONAL SOLID WASTES MANAGEMENT ASSOCIATION, ACCOMPANIED BY JEFF DIVER, SENIOR ENVIRONMENTAL COUNSEL, WASTE MANAGEMENT, INC.

Mr. JOHNSON. Good morning, Mr. Chairman. My name is Charles Johnson. I am the technical director of the National Solid Waste Management Association. I have with me this morning Mr. Jeff Diver, senior environmental counsel for one of our larger member firms, Waste Management Inc. Mr. Diver is replacing Mr. Harold Gershowitz this morning who at the last minute was unable to be with us. He was detained in Illinois.

By way of introduction, the Institute of Resource Recovery of the National Solid Wastes Management Association is an association of several companies that are presently offering to build and operate resource recovery systems, especially energy resource recovery systems, in the United States.

Our members include four of the six companies that are offering European-type mass-burning systems for producing steam and electricity from solid waste. Each of our member firms not only offers to build these systems but to operate them for a long period of time at guaranteed costs to the host community.

They view resource recovery, energy resource recovery in particular, as an opportunity for the private sector to perform valuable service to the public and extend its role in providing waste management services.

Undoubtedly the sponsors of H.R. 6638 feel a measure of frustration over mounting solid wastes disposal problems, energy shortages and at the same time a slow rate of implementation of waste-to-energy resource recovery in this country. Most likely they believe that some form of subsidy provided by the Federal Government can help accelerate development of this waste management alternative.

We maintain that however sincere these intentions, they have a real potential to actually set back resource recovery. In our testimony today we would like to make you aware of our concerns.

The 1970's were a period of great progress in resource recovery in the United States. As evidence I cite the March 1980 edition of

the Journal of Resource Recovery published by the National Center for Resource Recovery, Inc. In that issue NCRR has published a list of 38 large-scale resource recovery facilities that are operating, under construction or in the final contract signing stages.

Virtually all of these system facilities include energy recovery. Not one of those was in operation or would have made a list in 1970. I think this is proof that there has been progress in the 1970's in the construction of facilities.

More importantly the decade of the 1970's was a period during which there was a great deal of learning. We had a lot of successes and we had a lot of failures. Few, if any, of the facilities that have been built in this country have performed with the reliability or economics anticipated by their developers.

For some people this has been a cause of growing pessimism and some companies that once viewed resource recovery as an attractive business opportunity have dropped out of the field entirely. As the result of early disappointments and frustrations, resource recovery has a tarnished image in this country that we believe is not justified. We are optimistic about its future.

The pragmatist looks upon a failure as a learning experience. Thomas Edison once was asked if he was discouraged after more than 100 experiments with materials as the filament for his electric lamp had failed. He reacted strongly saying that these were successes not failures because each had taught him another material that would not perform. We all know that he went on to find the material for his filament to the perpetual benefit of mankind. Our optimisum toward resource recovery will be rewarded provided we learn from the experiences of the past decade and not repeat the unsuccessful experiments.

One of the most valuable lessons learned during the 1970's has been the pitfalls of Federal incentive programs to build resource recovery facilities. Six of the 38 facilities in the NCRR survey were built with some form of direct Federal construction assistance. This does not include several for which an agency of the Federal Government is the customer for the energy product.

Three of the six are experiencing operational difficulties to the point that they are not currently operating and their future prospects seem uncertain. The three that are operating are performing much less satisfactorily than the designers had anticipated. No doubt some of these facilities should not have been built and in fact would not have been were it not for the Federal support.

The projects built without Federal incentives have not been free of difficulties either but on balance they have been more successful. More importantly when facilities are built with capital from private investors, it is the private sector that is responsible if there are cost overruns or the process does not perform as expected. This emphasis on accountability is the basis for our position on resource recovery.

We believe that the primary stimuli for building resource recovery facilities will be the mounting need for new waste disposal capacity and the increasing value of energy. Waste-to-energy systems have benefited and should continue to benefit from the increasing cost of fossil fuel supplies. The major increases in energy

prices in the 1970's changed the emphasis of resource recovery from recovery of materials to recovery of energy.

Proponents of Federal financial incentives for resource recovery acknowledge these trends but argue that some form of Federal assistance could materially speed implementation of resource recovery. They justify such support on the basis that acceleration is a socially desirable goal. Our members are opposed in principle to Federal support of activities that should be carried out by the private sector.

We have, however, acknowledged that some Federal assistance could benefit waste-to-energy implementation and we have supported certain Federal actions that would assist resource recovery. We have carefully limited our support to those measures that we could be reasonably certain would not cause a repeat of the experiences of the 1970's, namely an additional period of learning by trial and error.

We supported participation of waste-to-energy systems in the crude oil entitlements program and those systems now recovering energy from wastes are receiving a needed boost that will continue for another year. We supported several Senate amendments to the Windfall Profits Tax Act that would have benefited resource recovery and the Congress did provide two important incentives in that act.

We supported the Public Utility Regulatory Policy Act because of the help it provides in marketing the energy produced by a waste-to-energy system. We support the House amendment to the bill to reauthorize RCRA that will provide additional moneys for planning and feasibility studies. We have opposed Federal incentives that we believe would have negative impact on the long-range future of resource recovery.

Let's examine the four incentive options proposed in title II of H.R. 6638 to see how each might impact resource recovery.

The lowest priority incentive would be direct Federal grants for the construction of facilities. Construction grants have been used to finance some resource recovery facilities in the past. The inherent reduction in accountability of the developers has resulted in construction of facilities that did not perform as hoped.

More importantly, with the high capital cost of waste-to-energy systems, a Federal grant program with only $100 million available annually could aid only a very few systems. Communities considering implementing resource recovery would be inclined to defer a commitment if they perceived that a Federal grant might be forthcoming in the future. This has been the experience with the program of construction grants for wastewater treatment facilities.

We contend that a program of Federal construction grants could set back resource recovery and we urge that this option be dropped completely from H.R. 6638.

How about Federal loans? This was the next higher priority incentive option. Might not the Federal Government speed resource recovery implementation by providing Federal loans for construction during these times of very tight credit?

The loan provisions of title II would merely substitute the Federal Government for the private investment community. Assuming that in the near future private investors will again be willing to

commit to long-term investments, a program of Federal loans offers no advantage over loans from private investors. Indeed there could be a real disadvantage in a Federal loan program.

The need to raise private capital serves as a very good watchdog over the activities of resource recovery developers. Investment bankers and their consultants carefully scrutinize resource recovery proposals before agreeing to underwrite sale of securities to raise capital for design and construction.

We question whether a bureaucracy formed to dispense loans without the due diligence and disclosure required in the private capital markets would provide scrutiny of equal rigor and depth. Assuming that the financial markets return to more normal conditions in the not too distant future, we oppose a direct Federal loan program.

Loan guarantees are the second ranked incentive option proposed in title II. Federal loan guarantee programs can be used in either of two situations. They might be used to secure financing for a project whose developer is not strong enough financially to win the confidence of private investors.

Alternatively loan guarantees can be used to transfer the technological risk of a new development from the private sector to the Federal Government. Neither of these is appropriate for a program to assist commercialization of resource recovery.

Financially weak firms should not be implementing resource recovery projects that require sophisticated management, operation, and engineering abilities. Similarly we believe that the Federal Government should not be fostering premature commercialization of technologically risky processes.

Title I of H.R. 6638 would provide additional support for the development of resource recovery technologies including loan guarantees. We do not favor loan guarantees as an element of a program designed to assist commercialization of waste-to-energy technologies.

The top priority element of the commercialization program of title II would be price guarantees, a program to assure that a waste-to-energy facility will receive a certain price for energy produced and either utilized or sold. The price guarantee proposal is similar to a proposal contained in S. 1934, introduced by Senator Bradley.

We have examined the concept of price guarantees in considerable detail. It is our conclusion that price guarantees as envisioned in either of these two bills would provide financial support of greatest benefit to those projects that produce energy in the least readily marketable form, namely a solid fuel derived from refuse intended to be burned in existing industrial or utility boilers.

Forms of energy in great demand such as steam or electricity would receive less benefit, perhaps none at all, because they command an attractive price in the marketplace already. Inherently a program of price guarantees would distort the competitive balance among resource recovery technologies. The Government would, in effect, be supporting the inefficient to make them artificially equivalent to the efficient.

We believe it to be essential that any program to assist resource recovery not be structured so as to favor one technology or one

energy form over another. The marketplace should dictate which technologies are chosen in each local situation. For this reason we do not support the concept of price guarantees as envisioned in either H.R. 6638 or S. 1934.

Having reviewed all of the four proposals in title II of H.R. 6638 and rejected each, we find ourselves in a position of opposing title II in its entirety. We urge this subcommittee and others that will consider H.R. 6638 to reconsider its approach to subsidies for resource recovery. We do not think you have the answer for an effective program of assistance within these pages.

We also have considered title III of H.R. 6638 and cannot support expansion of the Federal bureaucracy by establishment of an Office of Urban Waste Management. The existing organization within the Office of Conservation and Solar Energy of the Department of Energy is doing a competent job of administering DOE's waste-to-energy program.

Again, we thank you for the opportunity to testify today on this important matter.

Mr. FLORIO. Thank you very much.

Mr. Madigan.

Mr. MADIGAN. Thank you, Mr. Chairman.

I am trying to determine exactly how many different projects there are ongoing in the United States. The gentleman from the EPA mentioned 63 to which they had been providing some sort of assistance. You mentioned 38. Then I think your statement seems to indicate that 6 of the 38 facilities to which you refer may be among the 63 that the gentleman from the EPA was talking about. So, are there 63 and 32 that are ongoing?

Mr. JOHNSON. I can well understand your confusion. One of the rather common exercises in this business is to publish lists of projects and, depending on what you are trying to show, your list may be large or small. The list of 38 projects was published by the National Center for Resource Recovery and it was carefully stated, and I carefully quoted them, as projects that are built, are under construction or in the final contract signing stages.

This does not include any projects in what could be referred to as the early planning or feasibility stages. It is my understanding that all or virtually all of the projects that were assisted by the 63 planning grants of EPA were in the early planning stages. Therefore few, if any, of the 63 would also make the list of NCRR's 38.

Now, as far as the 6 there were 6 projects on the list of 38 published by the National Center that had received construction grants of one sort or another early in the mid seventies, primarily from EPA.

Mr. MADIGAN. But 32 of the 38 then are represented here as being projects which received no form of Federal financial assistance.

Mr. JOHNSON. For construction. There may be some in there that are anticipating receiving some or hoping to receive some funds but I do not think they are assured of any.

Mr. MADIGAN. None of those 32 is on the same list of 63?

Mr. JOHNSON. I think that is correct.

Mr. MADIGAN. Presumably at some point if all 63 referred to in the earlier testimony are constructed, then we would have around 95 plants in operation?

Mr. JOHNSON. I think that would be correct.

Mr. MADIGAN. Of the 32 that we are discussing here, how many of those are in operation right now?

Mr. JOHNSON. I did not review the list with that in mind. It would be a simple matter to do so. My guess is roughly 12 to 15.

Mr. MADIGAN. You mentioned the problem with Government grants from your perspective and you likened it, as I understood your testimony, to municipalities, presumably that would be able to afford to do it, not going ahead with sewer construction projects but instead waiting for a Federal grant.

The gist of what I thought you were saying was that if we have a Federal grant program, projects that otherwise might have gone ahead will wait until they qualify for a Federal grant. Is that what you said essentially?

Mr. JOHNSON. That is exactly right.

Mr. MADIGAN. You also mentioned that there is no advantage in Government loans. It would seem to me that a marginal project becomes doable if through the assistance of the Government as a cosigner or comaker on your loan you are able to qualify for a lower rate of interest.

A project that might not be economically feasible could become economically feasible if you had the Government as comaker of your loan. Would you disagree with that?

Mr. JOHNSON. I think it is theoretically possible but I think in practical terms a project that is really sound—again I qualify that, in times when people are making long-term investments—under those circumstances I think a financially sound or sound project can receive financing at rates that are quite attractive.

I am sure you are aware that in the Windfall Profits Tax Act the Congress made it very clear that waste-energy projects through and including the steam generator shall qualify for tax exempt financing with industrial development bonds. There are very financeable if they are sound projects.

I think the effect that you are describing, while theoretically true, would be very minimal.

Mr. MADIGAN. Thank you.

Mr. FLORIO. You pointed out something that may very well be the worst case scenario that someone can come in and by virtue of the tax exemption, the revenue tax exempt revenue bonds, proposed subsidies, put together something, if this goes through, with minimal amounts of investment in the whole facility.

I would be very concerned about the type of operator who would come in and take advantage of all of these incentives to become involved. I am not sure that we would be encouraging the right type of people into this industry. Is there any cause for concern that we become so generous that there is no private risk at all in the process?

Mr. JOHNSON. I think it is a very legitimate concern. I think there is enough recognition of this potential problem, there is some in H.R. 6638 as drafted, but in other areas, in other ways there has been recognition of this potential. For example, in the nondouble-

dipping provisions of the Windfall Profits Tax Act, will prevent someone from simultaneously taking advantage of tax-exempt financing and energy tax credits. You cannot do both; you have your choice; this is recognition of your concern.

At one point potentially it would have been possible to have these projects virtually risk-free. I think that is reduced now.

Mr. FLORIO. Thank you. Mr. Madigan.

Mr. MADIGAN. I have no further questions.

Mr. FLORIO. Mr. Matsui.

Mr. MATSUI. I have no questions, Mr. Chairman.

Mr. FLORIO. Mr. Johnson, EPA has recommended that title II of the bill, and you were very clear on your position, be used to provide support for existing facilities only to correct past problems as opposed to using it for new projects.

Do you have any thoughts on that approach?

Mr. JOHNSON. I have no strong opinion. I think to some extent we viewed the participation waste-to-energy projects in the petroleum entitlements program as being of a limited duration to help projects that are now in existence over another rough year or two.

I do not know that I really want to make that a way of life, in other words, patching up past mistakes. I think we should stop making mistakes.

Mr. FLORIO. You heard my question to the previous witness about the Hemstead facility. Do you have any information on the allegation that the Hemstead facility is having some serious problems involving hazardous waste emissions?

Mr. JOHNSON. I had been unaware of it. Mr. Diver whispered something in my ear while the question was being answered.

Mr. DIVER. It was coincidental, Mr. Chairman, that in a course I was teaching yesterday one of the students, a resident of Long Island, advised me that he had heard, and again this is the only information I have, that there had been dioxin emissions from that facility, apparently from the incomplete destruction of certain chlorinated materials that were in the waste being incinerated.

Mr. FLORIO. At one point that plant was in operation, was it not, and it was subsequently closed down?

Mr. DIVER. I really do not know other than the information I have just given you.

Mr. FLORIO. I have no further questions. Thank you.

Mr. DIVER. Mr. Chairman, I wonder if I might say something. I want to add the support of Waste Management, Inc., both as a corporation and as a member company of the Institute of Resource Recovery of the National Association for the position of the association in opposing the bill that is currently being considered.

From our particular viewpoint this bill has much more potential to eliminate, destroy, hinder, slowdown the development of effective resource recovery operations in this country than it does to promote those operations.

Because my company wants to be in that business and wants to be in that business for a long term, we would just as soon the Government not do anything that could lead to public dissatisfaction with resource recovery facilities because the Government was supporting basically systems which are not cost-effective, systems which could not pass market tests for reliability, and also holding

out a carrot to municipalities, as had occurred during the Federal Water Pollution Control Act in early days during which period of time the deputy director of the Illinois Environmental Protection Agency found that effective early 1975 municipalities just stopped building sewage treatment plants because the Government said there would be money and they would just as soon wait for it.

Either of these two, either the support of non-cost-effective systems, as to which I do note that in the prior two hearings that have been held on the House side, a representative of the Office of Technology Assessment and a past project leader developed a study for the Congressional Office of Technology Assessment, and both testified that subsidies should not be provided and, second, that the likely result of this particular bill will be the subsidization of systems which are not cost-effective.

Mr. FLORIO. Let me followup on that. I agree with some of what you have said. But the other side of the coin is in those areas where there really is not a choice on the part of public authority, landfills gone, an imminent health hazard from ground water contamination from landfill operations, there may very well be the need for a public sector approach to this problem if the private sector does not see fit to come in.

I think we have a responsibility to formulate programs to deal with those particular sets of circumstances absent the private sector's interest to become involved because the particular economic conditions are not satisfactory in terms of generating an appropriate cost-benefit ratio.

So, I think that we have to acknowledge the fact that there are those circumstances where there has to be some public involvement because the social benefits or the social problems are such that we cannot wait for the private sector to come along.

I do not want to paint this as being exclusively a concern that is going to be dealt with by the commercial people. There is a public safety component of this problem as well.

Mr. DIVER. Truly, Mr. Chairman. I did not want to leave the impression that there was not in the hypothetical situation you have outlined; of course, you have outlined a situation that is perfect for resource recovery. There is no landfill alternative. There is no competition. All you have is the ability to develop a resource recovery facility and, of course, the market will have to bear the cost of that facility.

We believe, of course, that over the long term of those facilities, and they are designed for 20-year lives, that over the term they will be profitable operations as well because of the ability to sell both energy and materials from them. I understand the hypothetical you pose. I do not think realistically it is one that will exist.

If Congress were shown that that is occurring in the United States or that there is a likelihood of its occurring, I would agree that Congress ought to do something to address it.

Mr. FLORIO. Let me give you a hypothetical with regard to the market. The market connotes that there is a commercial market but there is also a sort of taxpayers market there as well.

When you are talking about an area that may have a landfill, and the cost of disposal is cheaper than it would be in a resource recovery facility, yet you are going to the local officials and saying:

Well, 5 years down the line we are not going to have this availability of landfilling, therefore we are going to have to start on the effort for resource recovery but it is going to cost people an awful lot of money. In the long term it will be cheaper but in the short term it will cost an awful lot.

That is a difficult proposition to sell to local people. That may very well be the place where there is some need to assist. No one is talking about subsidy of tipping fees. That may be something that is probably going to be able to deal with one of the institutional obstacles that will induce people to come in, that is, commercial people to come in.

I know I have talked to commercial people and they say, "We just do not want to deal with 25 mayors of small communities to try to get them all to cooperate before we decide that we are going to put money into an area."

So, something that has not been discussed, that may very well be the subject for discussion, is the tipping fee aspect to provide assistance to overcome the institutional problems that emerge.

Mr. JOHNSON. Mr. Chairman, I would like to develop that a little bit with reference to a question you asked Mr. Plehn earlier on. You asked him about the implementation of these projects, the fact of whether it was the public or private entrepreneur who was going to take a lead in this implementation and the complications of it.

I think it is clear that virtually nearly all projects will be implemented as a cooperative effort between public and private entities. There are very few that are likely to be strictly private. I can name a couple. There are likewise very few that I think in the future will be strictly public with no real responsibility in the private sector.

Mr. FLORIO. On that last point, I make the distinction, and tell me if I am making a false distinction, between a public entity, community town *x* going in and hiring a private engineer and private architect and putting something together and then running it publicly as opposed to a public entity that goes and hires a private corporation to put the thing together and then to operate it, perhaps on a lease-back arrangement. Is that a fair distinction?

Mr. JOHNSON. That is precisely the distinction I am making.

Mr. FLORIO. I am concerned about the first situation, that is, where we have local people or a public entity that lets the contract to the engineers and then is stuck with putting something together and operating it when the degree of expertise is not always there. The result is these great big white elephant operations and the Federal Government perhaps has constructed them or under these proposals will be subsidizing them.

I think there is a very serious problem in that type of operation.

Mr. JOHNSON. I think your concern is quite correct. We as an industry are constantly discussing this point around the country with local communities, with States and I think we have done a relatively good job of making this concern known in local areas.

The diligence will have to continue. We cannot say it is completely known throughout the country. I do think there is a good awareness of this. I do not think we are likely to see too many projects built that way in the future. That is a personal opinion.

But there is still a cooperative effort because the public sector will always be involved in almost all cases in getting the project

going even when the entire responsibility for operating and running, technology and so on, is handed over to a private firm.

Mr. FLORIO. Let me make an observation. In my two counties there are grants that have been issued for planning. There it is, almost like locusts people have descended on the local officials with all kinds of brochures and presentations.

I am not sure all of those people meet the necessary standards. The degree of sophistication at the local level is not really that great. The person who makes the most attractive presentation, that holds out the most, may very well get a hearing beyond the proportion of their capability. I am concerned about that.

Mr. Madigan.

Mr. MADIGAN. Thank you, Mr. Chairman.

I think it is probably important to stress to you gentlemen that we do not need to spend money on this. We can find other ways to spend whatever money is available to us. As a matter of fact, this subcommittee has responsibility for things like Conrail. We can spend all the money we are given very quickly on that one railroad.

My problem with what you have said is that we are now in our seventh year since the Arab oil embargo and quadrupling of the price of oil. The technology that private enterprise would use presumably was available since these things were ongoing in Europe. The waste stream is available and has been available for 7 years.

In 7 years, as you have indicated in your testimony this morning, we have managed to build and get going about 10 or 12 of these plants in a country of over 200 million people. Why has it gone so slowly?

Mr. JOHNSON. If I could indicate, Mr. Madigan, one of the problems has been over the last 7 years that there has been no concerted effort nationally, be it a Federal effort or effort by the States, to assure that the competing mechanisms, that is, sanitary landfills, were indeed sanitary landfills.

Some are being operated at markedly reduced costs, costs that did not indicate their full social cost, as the chairman has indicated, or their full environmental cost. So, they were being kept arbitrarily low, below what they should actually be charging.

As a consequence, resource recovery in those earlier years, last 7 years, has been too expensive when compared to it.

Now, of course, we finally have a Federal program that at least began last October with regard to solid waste facilities that allows the Federal Government and States to go about utilizing a standard set of criteria to determine whether these fills are sanitary landfills, if fills are subject to congressional mandate for closure. That will help part of it.

The second part of it, of course, is increasing energy cost. Several years ago the energy costs began to increase. The increase over the last year has been phenomenal. As that increase has occurred, again the possibility of generating steam, electricity, refuse-derived fuel that can be utilized for generating steam or electricity has provided a possible setoff that was not available during those first 6 years.

It has been only fairly recently that we have had two things coming to fruition: First: High energy costs and second, Federal

and State program to close the facilities that have been unfairly competing with resource recovery.

Mr. MADIGAN. If I understand what you have said, the economics of doing this would not be there if not for other actions of the Government to make the dumping of wastes prohibitive in cost?

Mr. JOHNSON. No; I am not asking for the Government to make the other kinds of dumping prohibitive, just have the environmental acceptability of resource recovery the same as environmental acceptability of landfills. If the landfill can be operated so that ground water is protected, surface water is protected, the air is protected, such waste in that facility is stabilized, then environmentally at least it is not causing a burden on society.

Yet unfortunately across the country there have been entirely too many of those that are contaminating ground water, contaminating surface water, contaminating the air, and they have not been required to close down or be redesigned, which means obviously an increase in cost.

I do not ask Congress to increase the cost of that operation. Require that operation to comply with environmental regulations and if the consequence of that is the increasing of cost, so be it. At least the amount of total environmental burden presented by a sanitary landfill ought not to be greater than the total environmental burden presented by a recovery facility.

That is what the Resource Recovery Act has accomplished. The two have been put on parity at least as to their environmental effect.

Mr. MADIGAN. Thank you.

Mr. FLORIO. Our committee has jurisdiction over hazardous waste disposal. Is there any potential in your opinion for the development of hazardous waste disposal facilities as major energy generating facilities, either separately or in conjunction with the more traditional solid waste resource recovery systems?

Mr. DIVER. There is obviously a potential in terms of Btu value of many hazardous wastes. Unfortunately those same wastes are called that not because of their Btu value or inflammability but because of materials in them. It is assuring that materials in those wastes that are being burned do not escape.

The problem you talk about in Hemstead is magnified a thousandfold with the facility that has been designed to handle hazardous waste. We have seen requirements that polychorinated biphenyls be incinerated so that they are destroyed, yet we did not have one commercial incinerator in this country.

It is very difficult to construct a facility that will absolutely do that and will be operated all the time to do that. So you have that additional problem.

Mr. FLORIO. Is there a technical problem associated with the hazardous waste disposal facility or potential resource recovery facility or are we talking about the siting problems that are less technical?

Mr. DIVER. I think both. I think realistically both.

Mr. FLORIO. Thank you very much, gentlemen.

Mr. JOHNSON. Thank you, Mr. Chairman.

Mr. FLORIO. Our last witness is Mr. Basil Snider, president of the Garden State Paper Co.

Mr. Snider, we welcome you to the committee. I ask for the record that you introduce your colleague. Your statement will be made a part of the record and you may proceed as you wish.

STATEMENT OF BASIL SNIDER, JR., PRESIDENT, GARDEN STATE PAPER CO., ACCOMPANIED BY ANDREW DRANCE, CONSULTANT CONSULTANT

Mr. SNIDER. Thank you very much, Mr. Chairman. My associate this morning is Mr. Andrew Drance. He is a consultant to my company, Garden State Paper.

Mr. Chairman and members of the committee, as you have already stated my name is Basil Snider. I am president of the Garden State Paper Co. We appreciate this opportunity to testify on H.R. 6638, Municipal Waste-to-Energy Act of 1980.

The subject of waste to energy is of vital concern to that sector of the recycling industry which obtains its raw materials by source separation methods, before it is comingled with the garbage, before it is taken to the waste-to-energy facility to be burned or to be converted into fuel.

Recyclable waste paper, such as old newspaper, is the prime example of a source separated raw material. The sources of these valuable industrial raw materials are, at least in large part, the same municipalities and large urban areas which are contemplating the construction of waste-to-energy facilities which threaten to destroy these raw materials and deprive the national economy of essential basic resources.

Now, what does all this have to do with H.R. 6638? H.R. 6638 acknowledges, in its statement of findings and purpose, the existence of valuable recoverable materials in municipal waste. The proposed bill, however, is in our view entirely waste-to-energy oriented in its substantive provisions and fails to provide any protective measures or conditions to insure the continued availability of source separated waste paper for recycling purposes.

The bill proposes to establish an Office of Urban Waste Energy Management to perform functions which have been mandated in other legislative enactments. The functions set forth in titles I and II of the bill are now being carried out by the Department of Energy in a single-minded, energy-oriented manner which threatens the destruction of the recycled wastepaper industry.

The Department of Energy ignores congressional policy enactments which emphasize the importance of materials recovery in the consideration of solid waste source recovery programs. We are concerned that H.R. 6638 compounds the problem by failing to require the consideration of source separated materials recovery programs in the implementation of titles I and II of the bill.

Without legislative restraints being imposed upon the waste-to-energy planning and funding process DOE can be expected to continue to turn its back on source separated materials programs as an important materials and energy conservation adjunct of any sound economically viable system.

DOE's perceived position in this regard tends to encourage practices which appear to ignore the potential value of recycling to the Nation, to the community and to the waste-to-energy systems as well. Bonding companies and many systems vendors, for example,

demand that the waste generated by a municipality be dedicated to a proposed facility in its entirety.

Municipalities which may be part of a county or regional waste-to-energy plan are being forbidden to contract for recyclable waste-paper beyond the scheduled completion date of the proposed system. Municipalities are being assessed penalties for shortfalls in waste generation which would, in such instances, foreclose the institution of recyclable materials collection programs.

Mr. FLORIO. I have heard that representation made on a number of occasions. Yet the counterargument is that if we are going to go into resource recovery, the extraction of the usable paper from the solid waste stream would not jeopardize to any great extent the energy potential that could be generated out of the waste stream.

Do you have some generalization in terms of numbers that could be presented to us to make the determination as to whether extraction from the solid waste stream in the normal circumstances of usable paper as contrasted to all paper would in fact jeopardize a private commitment to come in and put capital into a resource recovery system?

Mr. SNIDER. Congressman Florio, I do not have those figures with me. We have made quite a study of this. In general, and frankly I detest generalities, but in general we find that the average municipal waste stream that we have looked at, if all of the recyclable paper were removed, it probably would not lower the energy content more than 5 or 6 percent.

Now, that is the recyclable content. Obviously paper napkins, things that have been comingled and contaminated, are still quite burnable and are not in most cases recyclable.

Mr. FLORIO. The conclusion you would draw is that the ability of facilities such as your own or municipalities to withdraw from a solid waste stream recyclable paper would not jeopardize the attractiveness of the resource recovery capability of the waste stream?

Mr. SNIDER. That certainly is our finding. I think we are finding more support now for that.

Mr. FLORIO. Is there any appreciable body of opinion to the contrary? Has anyone you know of done studies to indicate that unless there is an ironclad commitment that the entire solid waste stream be tied up for a 20-year period that one is going to come in and invest the money for a resource recovery facility?

Mr. SNIDER. What we seem to be involved in in that area is that in building and designing an energy resource recovery facility, it is necessary for the financing of such a facility, that the financial bonding companies, be assured that that operation is going to be sustained with a burnable, constant stream of raw material or fuel coming to it. Raw material, if you will, feeding it as fuel and at the same time at the other end a salable product in the form of steam or energy, are the major items that can offset the operating and capital cost of the project.

The financial community perceives this as buying a coal mine, if you will, and wanting to know that there is adequate coal there to fire the boiler. I can appreciate that view. However, I think, as the gentleman from the Department of Energy commented, part of the trick here is to size these units, that is to say undersize the units,

going in and assure that the waste stream will be there under fluctuating circumstances, which could include of course removal of recyclable paper products.

Mr. FLORIO. Thank you.

Mr. DRANCE. May I add to that, Mr. Chairman, in specific response to your question, it is generally acknowledged and EPA's study indicates that the Btu loss resulting from the source separation of waste paper would amount to somewhere around 3 percent, possibly as high as 5 percent, no higher.

This is acknowledged to be correct. The answer to your question whether there is a body of opinion which disputes that is generally no. However, there may be questions on the part of that sector of the industry which produces RDF, resource derived fuel, which depends very heavily on the fiber content of the solid waste stream because ultimately it is dried to produce a dry fuel, most of which is fiber. They might possibly dispute that.

But there are no statistics which indicate what that loss might be to such a facility.

Mr. FLORIO. Thank you.

Mr. SNIDER. As we were saying, the bill, H.R. 6638, provides a whole range of financial assistance devices which have already been enacted, authorized and appropriated in other enactments. Price guarantees, loan guarantees, loans and grants and other forms of Federal subsidy place an undue economic burden on the recycling industry.

The free market for raw materials is destroyed; the play of the marketplace for weeding out the marginal and uneconomic energy recovery system is blunted; the economy, the public official, and the taxpayer are denied benefits that may accrue otherwise.

Such benefits include, for example: One, the conservation of forest resources resulting from the annual collection and recycling into paper products of some 14.5 million tons of waste paper, including 3 million tons of newspapers used in the manufacture of newsprint, paperboard, and other paper products; two, the net energy gain ranging from 28.5 percent to 57.7 percent in the recycling of old newspapers into fresh newsprint over the energy derived from burning newspapers as fuel; and three, the reduction of the volume of waste to be disposed, the consequent reduction in the tipping fee charges and the potential income to be derived from the sale of the newspapers.

Mr. Chairman, we recognize fully the difficulty facing this committee and the Congress in legislating policy and action aimed toward achieving energy goals which lessen this Nation's dependence upon foreign energy sources. We do question, however, the need to enact H.R. 6638 on top of the legislation which has already been enacted, and pending enactment, all of which in the aggregate speak to the same issues contained in the bill under consideration.

Nor can we understand how another Presidential appointment and the establishment of another box on DOE's organization chart will solve the problems of the existing DOE organization in its efforts to cope with its massive and difficult responsibility. It would be more useful to include provisions in the legislation which would provide Congress more effective oversight of DOE's work.

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If H.R. 6638 is to move forward toward enactment, we do urge that it be amended to include safeguards against the threatened destruction of our Nation's materials recycling industries which depend upon energy conserving source separated materials.

The DOE must be directed to provide in its implementing regulations that the source separation of materials must be an integral part of the planning for any waste-to-energy project. The legislation must direct that Federal financial assistance in any form be denied any waste-to-energy project which precludes or forecloses the consideration of programs for the recovery of recyclable materials through source separation.

Only in this manner can the congressional will be carried out to maximize the resource conservation potential of municipal waste for both energy conserving materials and energy. Only if this is done will the public, including municipal officials, systems vendors, bonding companies, and others concerned, have a clear and true perception of congressional intent for the proper conservation and utilization of waste material resources.

We will be happy to answer any questions you may have. Thank you.

Mr. FLORIO. Gentlemen, thank you for your testimony. You have felt free over the last year to send to us your thoughts. Your thoughts have been very helpful. I think you and the general public are aware of the fact that the committee feels very strongly about resource recovery, direct energy and indirect energy benefits to be derived from resource recovery.

You can rest assured that this committee will be looking at the proposals that come before it with an eye to gaining the maximum benefits indirectly and directly and to make sure that legislation does not in any way inhibit source separation. I believe that is possible. Thank you very much for your testimony.

Mr. SNIDER. Thank you, sir.

Mr. FLORIO. The committee will stand adjourned.

[The following statements were received for the record:]

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TESTIMONY
BEFORE

SUBCOMMITTEE ON TRANSPORTATION & COMMERCE

MR. HAROLD GERSHOWITZ
SENIOR VICE PRESIDENT
WASTE MANAGEMENT, INC

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE, MY NAME IS HAROLD GERSHOWITZ. I AM SENIOR VICE PRESIDENT OF WASTE MANAGEMENT, INC, AND I AM ALSO HERE TODAY IN MY CAPACITY AS VICE CHAIRMAN OF THE INSTITUTE OF RESOURCE RECOVERY. MY COMPANY IS A PUBLICLY OWNED FIRM LISTED ON THE NEW YORK STOCK EXCHANGE. WE ARE ENGAGED IN MOST ASPECTS OF THE SOLID WASTE MANAGEMENT INDUSTRY INCLUDING WASTE COLLECTION AND TRANSPORT, DISPOSAL, HAZARDOUS WASTES MANAGEMENT AND RESOURCE RECOVERY. WASTE MANAGEMENT, INC CURRENTLY HAS THREE MAJOR ON-GOING ACTIVITIES IN RESOURCE RECOVERY. WE HAVE A CONTRACT WITH THE DEPARTMENT OF ENERGY FOR THE CONSTRUCTION AND OPERATION OF A "PROOF OF CONCEPT" FACILITY LOCATED IN POMPANO BEACH, FLORIDA. THIS PLANT IS INTENDED TO DEVELOP THE TECHNOLOGICAL FEASIBILITY OF A PROCESS FOR THE SIMULTANEOUS CONVERSION OF PROCESSED SOLID WASTES AND SEWAGE SLUDGE INTO USEABLE METHANE GAS. I WILL NOT DESCRIBE THIS PROCESS IN DETAIL BECAUSE I KNOW YOU HAVE HEARD CONSIDERABLE TESTIMONY ON THE WORK AT POMPANO FROM WITNESSES FROM THE DEPARTMENT OF ENERGY.

MORE RECENTLY, WE HAVE ENTERED INTO A JOINT VENTURE WITH THE DANISH FIRM OF VOLUND, LTD BY ESTABLISHMENT OF VOLUND USA. THROUGH THIS ORGANIZATION, WE ARE ACTIVELY MARKETING TECHNOLOGY DEVELOPED BY VOLUND AND USED IN DENMARK FOR MANY YEARS TO BURN SOLID WASTE, SIMULTANEOUSLY REDUCING THE VOLUME OF WASTE AND PRODUCING USEABLE QUANTITIES OF THERMAL ENERGY. AS YOU MAY KNOW, DENMARK LEADS THE WORLD IN ENERGY RECOVERY FROM SOLID WASTE. ACCORDING TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY, DENMARK CONVERTS 65% OF ITS SOLID WASTE TO ENERGY AND SYSTEM VOLUND IS THE TECHNOLOGY THAT HAS BEEN PRIMARILY RELIED UPON TO ACHIEVE THAT RECORD. TWENTY-TWO YEARS AGO PRINCIPALS OF OUR COMPANY CONSTRUCTED AND OPERATED

THE NATION'S FIRST PRIVATELY OWNED MASS COMBUSTION ENERGY CONVERSION PLANT AND SOLD STEAM FROM THAT PLANT IN STICKNEY, ILLINOIS, TO KOPPERS INDUSTRIES ON A CONTINUOUS BASIS.

WE ALSO BUILT, OWN AND OPERATE RECOVERY I IN NEW ORLEANS, LOUISIANA. THIS WAS THE NATION'S FIRST FULL-SCALE WASTE DISPOSAL MATERIALS RECOVERY SYSTEM AND IS, TODAY, THE PRIMARY DISPOSAL FACILITY FOR THE CITY OF NEW ORLEANS.

A COMPANY SUCH AS OURS THAT COLLECTS TENS OF THOUSANDS OF TONS OF WASTES EACH AND EVERY DAY, HAS A VIEW OF WASTE-TO-ENERGY PROPOSALS THAT IS SOMEWHAT DIFFERENT FROM THAT OF SOME OTHER ORGANIZATIONS. I AM SURE THAT YOU CAN UNDERSTAND THAT WHAT WE PICK UP EACH DAY WE MUST ALSO PUT DOWN AT A POINT OF DISPOSAL. SOLID WASTE IS NOT A COMMODITY THAT CAN BE ALLOWED TO ACCUMULATE IN INVENTORY. WITH THIS PERSPECTIVE, THE MOST IMPORTANT FACTOR IN ANY WASTE-TO-ENERGY SYSTEM OR FOR THAT MATTER ANY OTHER FORM OF RESOURCE RECOVERY IS RELIABILITY. THE PROCESS MUST FUNCTION DAY-IN, DAY-OUT IF IT IS TO SERVE WHAT, IN OUR VIEW, IS ITS PRIMARY ROLE, NAMELY DISPOSAL OR REDUCTION OF SOLID WASTES.

WE HAVE PARTICIPATED ONE WAY OR ANOTHER IN A NUMBER OF RESOURCE RECOVERY PROGRAMS DURING THE PAST DECADE AND WE HAVE CLOSELY MONITORED THOSE IN WHICH WE HAVE NOT BEEN INVOLVED. WE HAVE BEEN DISTURBED AT THE LOW LEVEL OF RELIABILITY THAT HAS BECOME ENDEMIC TO NEW RESOURCE RECOVERY VENTURES. THIS IS NOT AN EASY TECHNOLOGY TO IMPLEMENT. SOLID WASTE IS NOT A FREE FUEL. THE GREATEST MISTAKE OF THE FIRST TEN YEARS OF RESOURCE RECOVERY IN THIS COUNTRY, IN OUR OPINION, WAS THE ASSUMPTION THAT THESE FACILITIES COULD BE BUILT WITH TECHNOLOGY ADAPTED FROM

OTHER PROCESS INDUSTRIES AND THEN OPERATED WITH THE SAME LEVEL OF PREDICTABILITY AND RELIABILITY THAT WAS ACHIEVED IN THEIR ORIGINAL APPLICATION.

I WISH I COULD SAY THAT AS A NATION, WE HAVE MADE ALL OF THE MISTAKES THAT WE WILL MAKE AND THAT FROM HERE ON IT WILL BE A STORY OF SUCCESS FOLLOWING SUCCESS. EACH TIME WE HAVE A FAILURE IN THIS INDUSTRY, THE ENTIRE RESOURCE RECOVERY EFFORT TAKES A GIANT STEP BACKWARD. OUR MESSAGE FOR YOU THIS MORNING IS SIMPLE. A LATIN PHRASE USED IN THE FIELD OF MEDICINE IS "PRIMUM NON NOCERUM" WHICH TRANSLATED MEANS "ABOVE ALL, DO NO HARM." THE GOOD INTENTION OF CONGRESS IN THIS LEGISLATION WE ARE CONSIDERING TODAY MIGHT INDEED PROVE COUNTERPRODUCTIVE TO THE EFFORTS OF OUR INDUSTRY.

WE BELIEVE THE RESOURCE RECOVERY FIELD IS COMPLETING A SHAKEOUT PERIOD AND THAT THE VIABLE TECHNOLOGIES WILL NOW BE DEPLOYED IN INCREASING NUMBERS AS ENERGY PRICES ESCALATE; AS ALTERNATE DISPOSAL SITES BECOME LESS AVAILABLE; AND AS ALTERNATE COSTS OF TRANSPORT AND DISPOSAL RISE.

IN 1978, WHEN WASTE MANAGEMENT, INC DECIDED TO MOVE AGGRESSIVELY TOWARD COMMERCIALIZATION OF WASTE-TO-ENERGY SYSTEMS IN THE UNITED STATES, IT IS NOT SURPRISING THAT WE TURNED TO EUROPE FOR THE TECHNOLOGY WE WOULD EMPLOY. ACCORDING TO A STUDY COMPLETED RECENTLY BY BATTELLE MEMORIAL INSTITUTE FOR THE ENVIRONMENTAL PROTECTION AGENCY, THERE ARE OVER 250 PLANTS WORLD-WIDE DISPOSING OF SOLID WASTES AND RECOVERING ENERGY EVERY DAY OF THE YEAR. RELIABILITY OF THESE ESTABLISHED WASTE-TO-ENERGY SYSTEMS IS WELL KNOWN AND PREDICTABLE. SIX OF THESE PROPRIETARY EUROPEAN TECHNOLOGIES ARE NOW BEING OFFERED IN THE UNITED STATES THROUGH LICEN-

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SEES OR OTHER U.S.-BASED ENTITIES. A LOCAL COMMUNITY SERIOUS ABOUT IMPLEMENTING WASTE-TO-ENERGY RESOURCE RECOVERY WILL NOT FIND ITSELF WITHOUT FIRMS WILLING AND EAGER TO SUPPLY THE FACILITIES AND TAKE RESPONSIBILITY FOR THEIR OPERATION.

THE ECONOMICS OF SOLID WASTE DISPOSAL AND RESOURCE RECOVERY HAVE CHANGED DRAMATICALLY OVER THE PAST FEW YEARS. IN MOST OF THE COUNTRY, THE LAND DISPOSAL FACILITY WHERE WASTES COULD BE DUMPED FOR A DOLLAR OR TWO PER TON IS A PART OF HISTORY AND WHAT FEW SUCH SITUATIONS REMAIN SHOULD BE TERMINATED AFTER EPA PUBLISHES ITS INVENTORY OF OPEN DUMPS AS REQUIRED BY THE RESOURCE CONSERVATION AND RECOVERY ACT. PEOPLE HAVE BEGUN TO ACCEPT THE IDEA THAT PROPER WASTE DISPOSAL COSTS MONEY, $10 TO $20 PER TON AND HIGHER. RECENTLY, A BOND ISSUE WAS SOLD TO FINANCE A RESOURCE RECOVERY SYSTEM FOR NEW CASTLE COUNTY, DELAWARE, CALLING FOR A TIPPING FEE OF $24 PER TON. ADVERSE REACTION BY THE GENERAL PUBLIC WAS NIL.

DRAMATIC CHANGES HAVE OCCURRED ON THE ENERGY SIDE OF THE OPERATING EQUATION. TWICE DURING THE 1970'S THERE WERE PERIODS OF MAJOR INCREASES IN THE COST OF ENERGY RELATIVE TO THE COST OF OTHER GOODS AND SERVICES, FIRST IN 1974 AND AGAIN IN 1979. ALL ANALYSTS EXPECT THE COST OF FOSSIL-FUEL BASED ENERGY TO CONTINUE TO OUTPACE OTHER COSTS WHICH COMPRISE THE CONSUMER PRICE INDEX. RECENT ADJUSTMENTS IN PRICES FOR ENERGY PROVIDE A STRONG POSITIVE INCENTIVE FOR IMPLEMENTATION OF WASTE TO ENERGY SYSTEMS IN THIS COUNTRY. THE CONGRESS SHOULD NOT LOOK BACK AT THE 70'S AND PERCEIVE THAT THE RELATIVELY SLOW PACE OF WASTE-TO-ENERGY IMPLEMENTATION WILL CONTINUE INTO THE NEW DECADE. WE ARE MOST CONCERNED THAT CONGRESS WILL NOT RECOGNIZE THESE CHANGES FOR WHAT THEY ARE AND IN ITS ATTEMPT TO MOVE THINGS AHEAD MORE RAPIDLY, ACTUALLY MAKE THINGS WORSE. THIS

IS WHAT WE FEAR WILL BE THE RESULT OF THE INCENTIVE PROGRAM OF TITLE II OF HR 6638. THEREFORE, WE MUST GO ON RECORD AS OPPOSING SUBTITLE II AS IT HAS BEEN DRAFTED.

WE DO OFFER ONE POSITIVE SUGGESTION FOR YOUR CONSIDERATION. ALL WASTE-TO-ENERGY SYSTEMS BEING CONSIDERED TODAY ARE BEING DESIGNED FOR USEFUL LIVES OF 20 YEARS AND GREATER. SUCH PROJECTS LOOK ATTRACTIVE OVER THEIR FULL LIFETIME DESPITE, IN SOME CASES, NEGATIVE CASH FLOW DURING THE FIRST FEW YEARS. THESE PROJECTIONS ARE FAVORABLE BECAUSE OF THE REASONABLE ASSUMPTION THAT FOSSIL FUEL ENERGY PRICES WILL CONTINUE TO RISE AND INCOME FROM THE SALE OF ENERGY FROM WASTE-TO-ENERGY SYSTEMS WILL RISE ACCORDINGLY. WHAT WOULD HAPPEN IF ENERGY PRICES ACTUALLY WERE TO DECLINE? THE IMPACT OF SUCH A DEVELOPMENT WOULD BE DISASTROUS ON A WASTE-TO-ENERGY SYSTEM THAT WAS BUILT ON THE PREMISE OF INCREASING ENERGY PRICES. THE CONGRESS MIGHT CONSIDER A PROGRAM WHEREBY OWNERS AND OPERATORS OF WASTE TO ENERGY SYSTEMS WERE PROTECTED AGAINST A DROP IN PRICES OF CONVENTIONAL FUELS. WHILE WE ARE OPPOSED TO A PROGRAM OF PRICE GUARANTEES THAT WOULD ARTIFICALLY INDUCE THE CONSTRUCTION OF WASTE-TO-ENERGY SYSTEMS THAT ARE NOT OTHERWISE JUSTIFIABLE ECONOMICALLY. WE BELIEVE A PROGRAM DESIGNED TO PROTECT AGAINST THE CONSEQUENCES OF A DROP IN WORLD ENERGY PRICES SHOULD BE CONSIDERED. IF SYSTEM TIPPING FEES ARE PREDICATED ON THE PRICE OF FOSSIL FUEL AT THE TIME A PLANT BECOMES OPERATIONAL OR AT THE TIME THE INITIAL PROPOSAL IS SUBMITTED, A SUBSEQUENT DROP IN FOSSIL FUEL PRICES MUST, BY DEFINITION, RESULT IN HIGHER OFFSETTING TIPPING FEES OR FINANCIAL FAILURE OF THE PROJECT.

WE URGE YOU TO BE PATIENT AND LET THE MARKETPLACE DEVELOP. GOVERNMENT ATTEMPTS TO STIMULATE COMMERCIALIZATION OF WASTE-TO-ENERGY ARE FAR MORE LIKELY TO IMPEDE ITS DEVELOPMENT. TITLE II OF HR 6638 SHOULD BE REJECTED AND PARENTHETICALLY TITLE III AS WELL. PRIMUM NON NOCERUM! ABOVE ALL DO NO HARM!

TESTIMONY OF

ANTHONY R. MOLLET
PRESIDENT, AENCO, INC.
BOX 387
NEW CASTLE, DELAWARE 19720

Ladies and Gentlemen:

I am honored to have been invited to testify before your distinguished Subcommittee regarding Resource Recovery from Municipal Solid Waste (MSW) -- a business to which my associates and I have devoted the past ten years of our lives.

I am Anthony R. Mollet, President of AENCO, Inc., New Castle, Delaware. I have an M.S. Degree from Massachusetts Institute of Technology and spent twenty years in the Marine Corps as a Test Pilot and All-weather Fighter-Pilot. I have worked in various technical and management capacities in private industry for 18 years.

In 1971, we designed and built the New Castle County, Delaware Solid Waste Reclamation Plant -- and we have been operating it continuously since December 1972. This plant has now processed one million tons of solid waste -- so we probably have more "hands-on" experience in this single plant than any other firm in this business.

I wish to leave with you ten messages:

1. Resource Recovery has not yet been proven to be both technically and economically feasible.

2. The very best resource recovery systems require a great deal of landfill. About 1/3 of generated wastes must bypass the typical plant -- because the plant physically can't process such wastes on account of danger to plant equipment and personnel. Another 20% of the material that is processed in a typical plant must be landfilled as process residue.

3. EPA, which has funded six Demonstration Plants, has never experienced success. Yet, EPA is now funded to advise hapless communities to install resource recovery plants that are likely to become financial burdens on said communities for many years.

4. EPA and DOE are advocating burning -- usually in European boilers -- the refuse to produce steam and/or electricity -- ignoring the much greater potential value of reclaiming marketable paper fibers from the mixed solid waste -- and/or to produce ethanol for gasohol from these fibers. The waste-to-energy plants advocated by EPA and DOE are not "cost-effective."

5. At least ten of America's largest companies have left the resource recovery business. Seven of these companies have built and operated resource recovery plants. The other three had contractual opportunities to build such plants -- but declined to pursue the business.

6. In most cases, communities would be well-advised to establish modern landfills -- and perhaps later extract natural gas from these landfills. A well-run Sanitary Landfill can be operated at about 1/3 the net cost of a typical Resource Recovery Plant.

7. Much more development is required to make resource recovery successful. Existing technologies either do not work well — or they are far too expensive. New technology must be demonstrated.

8. As an industry, the resource recovery business has recommended plants that cost too much to build and to operate.

9. American industry has probably lost in excess of $300 million trying to make resource recovery work. The Public Sector has lost at least as much. There are a few technically successful plants, but they are financial failures. There are scores of plants that are not technically successful -- i.e. they do not perform in accordance with engineering predictions.

10. If the cellulose in our 135 million tons of municipal solid waste were converted to ethanol -- we would produce about 5.3 billion gallons of ethanol on a conservative premise -- or 50% of our total national requirements to blend 10% ethanol with 90% gasoline to produce gasohol.

SOME PLANTS THAT FUNCTION

Several plants that mass-burn the incoming refuse to produce steam are functioning about as predicted — in many cases after large amounts of additional capital was invested. Some of these plants have been technical successes, but we know of none that functions at a net cost that is even close to the cost of operating a modern sanitary landfill. Some examples are:

- Chicago, Illinois Northwest Incinerator. This plant built in 1970 at a capital cost of $23 million has proven technically successful. Steam markets have recently been developed and service installations are currently being made to utilize part of the steam generated from about 1,200 tons per day of MSW.

- Saugus, Massachusetts. After some problems that included an explosion in a shredder (now eliminated from the process), early corrosion of boiler parts and air pollution, this $50 million plant actually processes about the predicted tonnage of waste, and actually produces about the predicted amount of steam.

  Until the recent increase in oil prices and the granting of "oil entitlements" to the plant, it was not profitable even with a "tipping fee" of $13 to $16 per ton.

- Nashville, Tennessee. This $25 million mass-burning steam generating plant is now said to be working well — after numerous modifications and retrofitting air-pollution equipment costing as much as the original plant cost. Per-ton costs are unknown.

- Harrisburg, Pennsylvania. This mass-burning steam plant built 1971 is operational. A severe explosion/fire in the Receiving Area in 1978 caused about $250,000 damage. Per-ton costs are unknown. Steam markets are being developed, and service installations currently being made.

Two plants that produce refuse-derived fuel (RDF) are working:

- Ames, Iowa. This city-owned plant produces an RDF for sale to the adjacent City boilers. The plant has remained operational for about four years. Per-ton costs are 1,400% above the original estimate -- even though the City credits itself top-dollar for the RDF.

- Madison, Wisconsin. This small plant is producing an RDF that is being burned by the local utility. Per-ton costs are unknown.

Small Modular Incinerators. Several of these units, designed to produce steam by burning between 20 and 100 tons per day of solid waste, have been installed. The example most often cited by the EPA as "proving" this technology, namely the one installed in North Little Rock, Arkansas, has been shut down and its future is not clear.

SOME LARGE PLANTS THAT ARE LATE IN START-UP OR HAVE BEEN CLOSED.

- Milford, Connecticut. This $3 million two-line Shredding Plant went into operation in 1972. It experienced a large explosion in 1973 and was never re-opened.

- Chicago Southwest Supplemental Fuel Facility. This beautiful $25 million plant, designed to produce refuse-derived fuel (RDF), was first run during Mayor Daley's last election campaign in November 1976. Despite diligent efforts by Chicago Engineers, it has proven impossible to operate the plant -- at least without major changes and additional investment. The plant is now shut down awaiting a decision on what to do next.

- San Diego Pyrolysis Plant - a $15 million facility. Never had a continuous run producing "pyrol" -- a synthetic oil that the plant was supposed to produce. Permanently closed.

- St. Louis RDF Plant. Produced a relatively small amount of refuse-derived fuel (RDF), some of which was fired in one of the boilers of Union Electric. This 300 ton per day garbage reclamation plant was uneconomical to operate in comparison with existing disposal facilities. The RDF Plant, which cost about $3 million in 1973 was sold for scrap in November 1978 -- for a total of $129,000.

- Baltimore Pyrolysis - a $30 million facility. After great technical effort by Baltimore's Engineers, and after the investment of again as much money as was initially invested, this plant is operating at 50% of design capacity. A truly noble technical effort by City Engineers -- but certainly not a financial success.

- Lane County, Oregon. Toward the end of a "shakedown" period that had already lasted two years, this RDF Plant experienced a severe explosion. Its ultimate operation is questionable.

- Monroe County, New York. This impressive $50 million plant is still in "shakedown". Per the original contract, it was supposed to be in full operation more than two years ago.

- Hempstead, New York. This super plant is designed to produce electricity. Its highly diligent Contractor has experienced startup difficulties including severe labor problems, odor problems, equipment problems and emission problems. The plant cost $123 million vs. initial estimate of $73 million.

- Bridgeport, Connecticut. This unique $54 million plant is designed to produce powdered refuse-derived fuel -- Eco-Fuel II. The plant has been in "shakedown" for nearly two years. Company Engineers are working night and day to make it operate reliably. Several explosions haven't helped.

PROBLEMS OF LARGE-SCALE FEDERAL FUNDING OF PRODUCTION RESOURCE RECOVERY PLANTS

The problem of large-scale Federal involvement with resource recovery is that, unless the Federal Government funds 100% of the capital and operating cost of the plant, a community may find itself stuck with an unworkable plant (and bonds to repay) — or it may find itself stuck with a plant that requires an excessively-high "tipping fee" to keep it operational. For a small example, one may ask: Did the small community of Franklin, Ohio benefit from its resource recovery plant? The answer seems to be clearly "no." Community officials devoted much time to overseeing the operation of the plant during the years that it operated. Now the community is stuck with a shut-down plant — and with a $65,000 per year bond-obligation for some 12 years.

What will happen when, as seems inevitable, a very expensive resource recovery plant is forced to close? How will a community of, say, 400,000 people feel if they find themselves stuck with repaying a $90 million bond issue for a plant that doesn't work — a plant that they built in the first place mainly because $35 million of Federal assistance was available?

I do not believe that the industry is at the stage of technological development that justifies large-scale investment in resource recovery — except in those few instances where the community has no other choice.

BASIC ECONOMICS OF RESOURCE RECOVERY

Typical resource recovery plants must receive annual cash equal to about 30% of invested capital — just to break even. This breakdown is as follows: 12% of capital to repay bonds; 10% of capital for operations and maintenance; 3% of capital for General and Administrative expenses; 5-10% of capital for overrun contingency, inflation, and for replacement of short-life items. Thus a plant that costs about $100 million must receive at least $30 million per year for twenty years — just to break even. If such plant is designed to process, say, 300,000 tons per year of solid waste, then $100 per ton of waste has to be generated — somehow - just to break even. The most optimistic proponent of resource recovery would speculate that perhaps $25 per ton could be realized from sale of energy generated by burning a ton of the waste — THUS LEAVING THE NEED FOR A $75 PER TON TIPPING FEE —which is to be compared with a fee on the order of $10 per ton for a very well-run sanitary landfill.

The above makes it clear that the industry must devise solutions requiring less capital — or must devise solutions that involve the extraction or manufacture of products that involve a cash income of more than $25 per ton of refuse.

In this era of inflation, companies try to plan for a 30% pre-tax return on investment. To make such a return on a resource recovery plant would require annual cash income equal to about 60% of invested capital per year.

The above should make it clear why private equity capital has not been invested in resource recovery plants.

EVER-INCREASING ENERGY PRICES?

Many believe that the price of energy will continue to rise -- both in real terms and in terms of inflated dollars. For this reason, many advocate that waste-to-energy plants be built as rapidly as possible. Although these people recognize that the plants will lose money in the early years of operation, they consider that, as energy prices continue to rise, the plants will become profitable -- and can thus recoup the losses incurred in the early years of operation.

I do not believe that energy prices will necessarily continue to rise. They may even fall -- if, for example, our 1,000 year resource of geopressurized natural gas can be extracted; or if abundant oil is produced from shale; or if some new large oil-field is discovered. The present high price of energy, particularly liquid energy, may prove to be as transitory as was the 50 cent per gallon gasoline in the early 1920's -- the price had dropped to 18 cents per gallon by 1927.

But even granting that energy prices will continue to increase, is it wise to invest in waste-to-energy plants? Would it not be wiser to invest in oil companies, natural gas companies or coal companies? Will, or should, the Federal Government bail out companies who invest in waste-to-energy if the price of energy falls? PERMANENT INFLATION?

Many people advocate the immediate erection of waste-to-energy plants on the theory that inflation will continue, and that the bondholders can be repaid in debased currency. This appears to be the moral equivalent of rape of the bondholder or the investor.

But even granting that inflation may be a permanent fact of life, would it not be wiser to invest in precious metals or something that does not depreciate in value -- as solid waste resource recovery plants certainly do? Should the Federal Government compensate bondholders for inflationary decrease in the value of their investments?

WHY HAVE SO MANY LARGE COMPANIES LEFT THE RESOURCE RECOVERY BUSINESS?

At least ten of America's largest companies have entered the solid waste business, and have now abandoned it. Companies that have erected resource recovery plants and have either left the business, or have announced that they are not seeking further business include Westinghouse, Monsanto, Carborundum, Allis-Chalmers, American Can, Occidental Petroleum and Union Electric.

Large companies that had entered the business and had opportunities to sign contracts to build and operate resource recovery plants -- but who declined to do so include General Electric, Hercules and Continental Can.

I do not know with certainty why these companies abandoned this business, but I think that the major reasons were:

- Perceived poor or negative return on investment.
- High risk of liability from explosions.
- High risk of liability from products marketed.
- Refusal to use "off-balance sheet" financing. Large companies usually feel obligated to repay debt that may result from plant failure -- regardless of the source of the debt. Thus they tend to show such debt as a contingent liability on their balance sheets. If the plant fails, they would feel obligated to repay the debt. Thus the full cost of the plant (no matter how financed) must, in their case, yield a return on investment that is comparable with any other investment.

  Such large companies cannot compete with firms who are willing to use "off-balance sheet" financing (which really involves letting the bondholders assume all or most of the risk).

Is there not something basically wrong with a business that is abandoned by such large and reputable companies?

RESOURCE RECOVERY COMPETENCE IN FEDERAL GOVERNMENT

- Headquarters, EPA.

There used to be about ten people in Headquarters EPA who had a fair understanding of Resource Recovery. Many have now been transferred to Hazardous Waste positions. Generally, Headquarters EPA labors under the delusion that the technical problems of Resource Recovery have been solved. They consider that no further research and development is needed, and they are actively soliciting local communities to install unproven Resource Recovery systems. The fact is that the technical problems of Resource Recovery have not been resolved — at least in a cost-effective manner.

- EPA Municipal Environmental Research Laboratory (MERL) Cincinnati.

About fifteen highly competent practitioners are located in Cincinnati. Many of these people have years of "hands-on" experience in resource recovery, and at least one operated a now shut-down resource recovery plant for three years. This is the group that has demonstrated an apparently successful acid-hydrolysis system to produce ethanol from the cellulose in the waste stream. They are demoralized because EPA is cutting off funding for research in resource recovery — a grave mistake in our opinion.

- U.S. Bureau of Mines.

About ten highly dedicated people have been operating a well-defined MSW pilot plant that was set up in Avondale, Maryland to test various resource recovery machinery and systems. These competent people are distressed to learn that funding for their very useful facility is being terminated. Here is another group of real experts with a wealth of real "hands-on" experience.

- U.S. Department of Commerce and National Bureau of Standards.

Under RCRA, the Department of Commerce is responsible for developing markets for materials recovered by resource recovery plants. EPA has spent millions of dollars on "market studies" — which have been nearly useless. D.O.C. and N.B.S., by contrast,have invested a few thousands of dollars on tests of processes to upgrade recovered materials — and appear to be achieving early success. The marketing efforts of the business-oriented people in D.O.C. and the highly qualified scientists in N.B.S. should be encouraged with adequate funding.

- Department of Energy.

D.O.E. currently has two competent, but badly over-worked people, who are concerned exclusively with solid waste. Your bill seems to address this problem. We would urge that the new Directorate established in this bill not overly concentrate on burning solid waste to produce energy — to the neglect of saving energy by recovering energy intensive materials in the waste stream. We would further urge that the new Director take advantage of the other portions of the Federal Government in which skilled practitioners are located.

PAPER PULP PRODUCTION

AENCO has demonstrated that its pilot Rotary Drum Air-Classifier (RDAC™) can produce two relatively dry fractions from mixed solid waste -- one fraction containing only light-gage paper such as newspaper, textiles and plastics -- and another fraction containing only corrugated boxes, boxboard, textiles and plastics.

We shipped samples of these two fractions to Karhula, Finland -- where we proved that plastic-free synthetic pulps can be extracted from the two fractions with the Ahlstrom FIBREFLOW Pulping System. The News-Rich waste-derived pulp has a value of about $55 per dry ton. The Corrugated-Rich Pulp has a value of about $125 per dry ton. If burned as fuel these paper pulps have a market value of between -$5 and +$10 per ton, thus they are worth much more as pulp than if they are used as fuel.

Moreover, using these pulps to make paper saves much more energy than can be extracted by burning them. Approximately 25M Btu are used in making a ton of paper from virgin wood. Only about 9M Btu are used in making a ton of paper from wastepaper, or the AENCO/Ahlstrom synthetic pulps. Thus, one saves about 16M Btu for each ton of paper pulp extracted from the waste stream and used to produce paper. This compares with 16M Btu fuel value in a ton of bone-dry paper. But if a ton of paper is burned, one does not extract 16M Btu. The useful heat is reduced by boiler inefficiency. One obtains useful heat of only about 10M Btu per bone-dry ton -- minus the heat required to dry the paper. Including the heat for drying, one can expect to extract only 8-9M Btu by burning a ton of paper, yet one saves about 16M Btu by reusing the paper.

As pointed out by Dr. E. Graminski of the National Bureau of Standards, synthetic pulps can be used in nearly any paper mill, whereas wastepaper can be used in only specially equipped mills. Thus, there is a much wider market for waste-derived pulps than there is for wastepaper.

Alternatively, as discussed below, the paper pulps could be converted to ethanol.

The next logical step is a pilot plant (not production plant) incorporating the AENCO RDAC™ and the Ahlstrom FIBREFLOW Drum to produce on the order of 50 tons per day of these pulps -- to determine the day-to-day quality, and to validate the market. Some of this pulp should be produced to make ethanol in a pilot plant as discussed below.

M = Millions

MANUFACTURE OF ETHANOL FROM SOLID WASTE

Approximately 50% of household solid waste is cellulose. AMCO has developed a method to extract the cellulose.

Cellulose can be converted to glucose by enzymatic-hydrolysis or by acid-hydrolysis. However, this has been done only at laboratory scale (about one ton per day). Glucose can easily be fermented to produce ethanol which could be mixed with gasoline to manufacture gasohol. If all the cellulose in America's MSW were converted to ethanol, we could produce about 5 billion gallons of ethanol per year — or enough to blend 5% ethanol with 95% gasoline for all gasoline consumed in the United States.

We caution that enzymatic-hydrolysis of waste cellulose has been developed only at laboratory scale. We have serious reservations as to the economic viability of enzymatic-hydrolysis for this purpose. Additionally, we are uncertain whether or not toxic substances in the waste stream might kill the enzymes and stop the reaction.

On the other hand, we are quite impressed with the acid-hydrolysis system that has been developed under the leadership of Mr. Charles Rogers of EPA's MERL in Cincinnati. We consider that Mr. Rogers is one of the countries' leading experts on hydrolysis. He had worked with enzymatic-hydrolysis and had concluded that it was not cost-effective. Accordingly, he worked with Doctors Walter Brenner and Barry Rudd of New York University in establishing an Acid-Hydrolysis Research Program. The continuous Acid-Hydrolysis System that they have developed manufactures a dark brown glucose that smells like molasses — and does so on a reliable basis. If we had to select a single promising hydrolysis concept today, we would select the Rogers/Brenner/Rudd Acid-Hydrolysis System. It seems to be cost-effective.

However, neither hydrolysis system has operated beyond laboratory scale. It would be foolish to build a commercial plant using either hydrolysis system — as the scale-up is much to great.

It would certainly, however, be wise for the Federal Government to fund one or more pilot hydrolysis systems processes on the order of 50 tons per day of cellulose into glucose. Scale-up from 50 tons per day to 1,000 tons per day would then be relatively straight-forward.

WHAT SHOULD BE DONE?

1. Recognize that the problem has not been solved.

   - Plants that dry-shred as the first processing step (i.e. the majority of resource recovery plants) will experience severe explosions — probably an insoluble problem.

   - Plants that mass-burn to produce steam involve such high costs that they are not competitive with modern sanitary landfills.

   - Small modular incinerators do not have long-term operating experience, and some early experience has been negative.

2. Emphasize research and development — including Federally-funded demonstration plants that involve new technology to:

   - Lower capital costs and improve reliability.

     - New front-end sorting systems that do not involve shredding and are unlikely to induce explosions.

     - Use systems that are likely to minimize wear.

   - Produce products having greater value than the products and energy currently demonstrated. This should involve:

     - Production of paper-pulp and thermal extraction of aluminum foils and cans. This might yield $35 income per ton of solid waste processed.

     - Production of ethanol from the cellulose in the waste stream. This might reasonably solve 20% of the gasohol production needs, and might produce cash income equal to about $75 per ton of solid waste.

3. Involve Commerce Department Economists and Bureau of Standards Scientists in resource recovery decision-making.

4. Greatly increase the two-person overworked Staff in DOE that is involved with solid waste, or transfer this responsibility to another Agency. Perhaps transfer the competent resource recovery people in EPA to DOE.

5. Provide Federal incentives for well-operated sanitary landfills.

6. Go slow in encouraging communities to invest in resource recovery — until the industry has demonstrated solutions that are both technically and economically feasible.

Thank you for the opportunity to present this testimony. I realize that the information that I have presented is somewhat pessimistic in tone. The very fact that I am still in the business should, however, show that I am confident that the problems of the industry will be solved. They will be solved, however, only if we have the courage to recognize that they exist. They will never be solved by pretending that resource recovery technology has been proven to be economically and technically viable — when, in fact, it is not!

SPECIFIC COMMENTS ON HR6638

We generally support the provisions of this bill, and we are particularly pleased with Title I of the bill. Title I appears to recognize that a great deal more research and development is needed to make resource recovery both technically and economicallyviable. We make the following specific comments:

- The goal to conserve and/or produce one quadrillion Btu of energy per year by the year 1990 from the processing of municipal waste appears to be unrealistic. To produce this amount of energy would require that we burn about 135M tons of solid waste per year for energy-producing purposes. This represents 100% of all municipal solid waste that is produced today. We suggest that this goal be reduced to approximately 1/4 quadrillion Btu's by the year 1990 -- in order to prevent the rapid installation of waste-to-energy systems that are not cost-effective.

- Under Title I we would suggest that language be inserted to encourage the Director to establish cooperative Research and Development Programs with private industry. Recognizing the risk in most such Research and Development efforts, we believe that relatively massive Federal assistance is appropriate.

- We believe that language should be inserted to ensure that patent rights to equipment not previously patented that is developed with Federal funds should reside in the public domain.

- Language should also be inserted to provide financial incentive to communities who make their wastes available to research and development projects.

- Under Title II we suggest adding the following language "whenever the term 'waste-to-energy' is used it will be understood to include processes which conserve energy by the recovery of energy-intensive materials from the waste stream including, but not limited to, paper, paper pulps, cellulose, ferrous metals, non-ferrous metals and glass. It shall also include processes which produce new forms of energy from the waste stream including, but not limited to, Pyrolysis to manufacture oil or gas; Hydrolysis to produce glucose from which ethanol can be fermented; Biological processes (including sanitary landfill) to produce methane, and all forms of Refuse-derived Fuel."

- We believe that language should be inserted under Title II to ensure that the Director provide loans, grants, guarantees, or price guarantees only to processes that he certifies to be cost-effective -- that is, processes which by engineering estimates appear to be less costly than any other environmentally-acceptable alternative.

[Whereupon, at 11:45 a.m., the hearing was adjourned.]

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